

Amateur Photographer



Leica Q (Typ 116)
We test the new full-frame compact
camera that everyone's talking about

Small World

Nadav Bagim shares his unique approach
to capturing magical **macro images**

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BUILT-IN WIFI



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COVER PICTURE © NADAV BAGIM

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A friend told me the other day that he used to laugh at his dad for never listening to music made after 1975 – only to realise that he now never listens to anything from the last decade himself. It's a sign of getting old, I guess, or at least becoming comfortable with the familiar.

It's the same with camera technology. Many film users begrimed digital. For some, optical viewfinders will always be better than their

7days

A week in photography

electronic counterparts, touchscreens are the work of the devil, and don't even mention why we need video capture on our DSLRs. Yet future generations will continue to embrace such technology, and no doubt have their own technological grudges.

On pages 48–53, I've tested the Leica Q and, I have to say, I'm pleased with the way Leica has embraced the latest technology, yet made a camera feel like the Leicas we know and love. **Richard Sibley, deputy editor**

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ONLINE PICTURE OF THE WEEK



© CHRISTIAN MEERMANN

Stripes by Christian Meermann

Nikon D7100, 70–300mm, 1/400sec at f/8, ISO 1,000

'I've been taking portraits of animals for years and have built up a body of work that contains several hundred images of all kinds of species,' says Christian. 'It shouldn't be surprising that I've started to search for new approaches in animal portraiture. With that in mind, I came up with the idea of a new series I call "Tight

Crops". I try to show only a tiny fraction of the animal (preferably not the head), yet keep it recognisable. To make it a bit more interesting, I also try to incorporate an abstract element, in this instance a curve. It's safe to say this image is a bit experimental in nature.' To see more of Christian's work, visit www.chm-photography.com

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Email Email a selection of low-res images (up to 5MB of attachments in total) to appicturedesk@timeinc.com.

CD/DVD Send us a disc of high-resolution JPEG, TIFF or PSD images (at least 2,480 pixels along its longest length), with a contact sheet, to the address on page 20.

Via our online communities Post your pictures into our Flickr group, Facebook page or the gallery on our website. See details above.

Transparencies/prints Well-packaged prints or slides (without glass mounts) should be sent by Special Delivery, with a return SAE, to the address on page 20.

NEWS ROUND-UP

The week in brief, edited by Chris Cheesman

X-T1 AF revamp

Fujifilm promises a new AF system alongside other improvements in the latest firmware update now available for the X-T1. Fuji UK said the free upgrade features zone mode and wide/tracking modes for 'effortless and accurate capture of moving subjects'; plus improved phase detection autofocus designed to make the camera work much better in low light and low contrast situations. Visit www.fujifilm.eu/uk/news/article/news/fujifilm-x-t1-firmware-version-400-is-now-available



'Adventure-proof' Sirui tripods



New launches from Sirui include Wave & Wilderness tripods with special seals to help prevent ingress of dust and water. Prices start at £599.99. Sirui has also updated its Travel TOX line with two new models (priced from £169.99). Also new are two video monopods with a 'stand spider' and a new tilt head. Visit www.sirui.eu

Win a Sony Alpha 7S

A Sony Alpha 7S is among prizes to be won in a competition to capture imaginative images of British life. Open to amateur and professional photographers, the Sony-sponsored British Life Photography Awards boasts £10,000 in prizes. The overall winner will bag £6,000 worth of kit including a Zeiss FE 24-70mm f/4 lens and a 55in Sony TV. The closing date is 26 September 2015. Visit www.blpawards.com



Swift rights row escalates



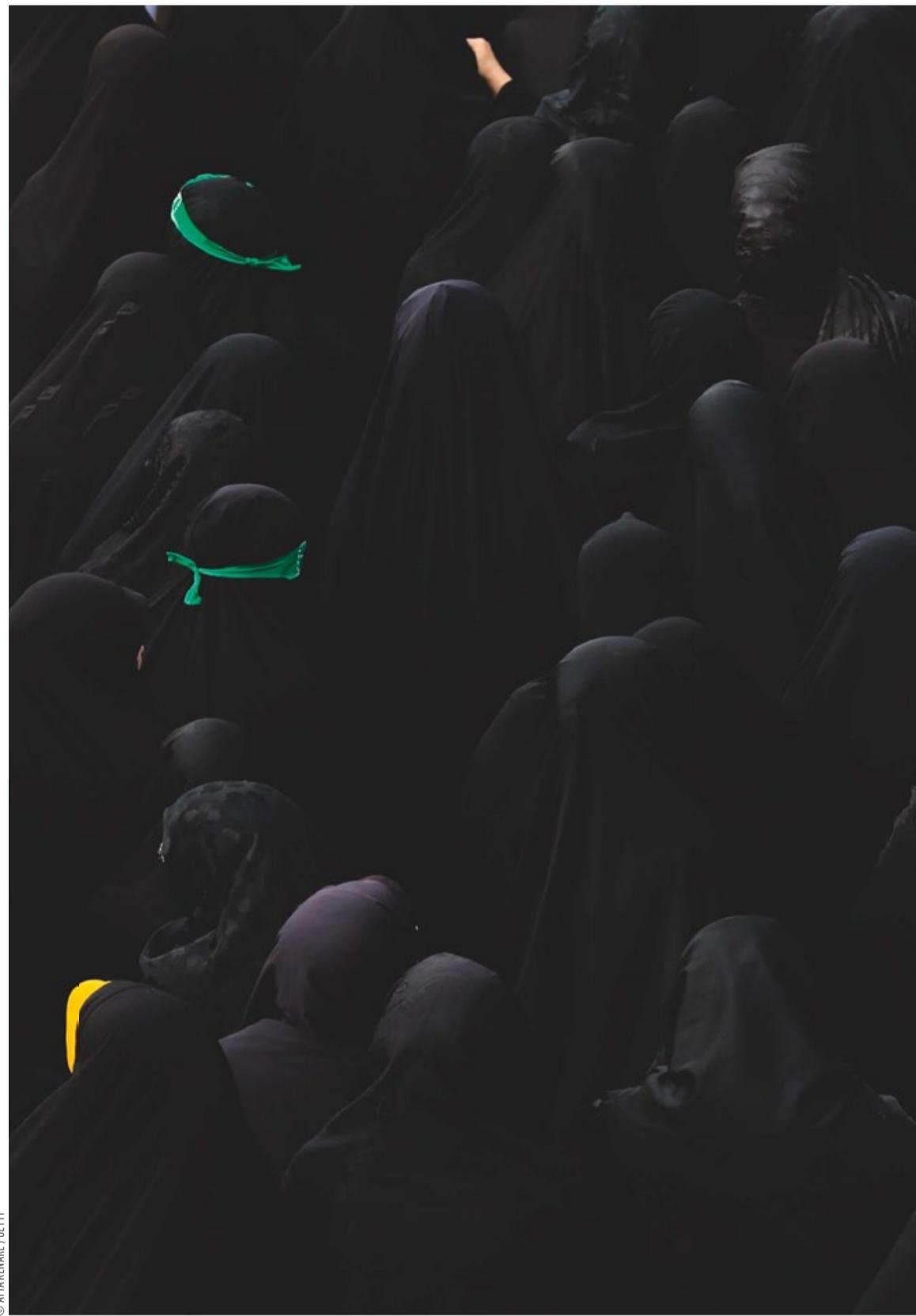
The Irish Times refused to publish photos of singer Taylor Swift to accompany their coverage of her Dublin concerts in protest of her 'right grabs' contracts. The paper said the terms of the contract were 'exceedingly restrictive'. Photographer Jason Sheldon wrote an open letter to Swift, accusing her of not offering photographers a fair deal (reported in *News AP*, 11 July).

Terror victim

Tributes have been paid to Carly Lovett, a photographer from Lincolnshire, who was among 30 Britons killed in the terror attack at a beach resort in Tunisia. The 24-year-old, who was also a fashion blogger, worked at an e-commerce company based near Gainsborough. Carly had reportedly been travelling with her fiancé Liam Moore who survived the onslaught that left 38 people dead.



Carly Lovett
We wish the deepest regret and sadness that Fizzco have lost the extremely talented and beautiful Carly Lovett in the atrocities in Tunisia.
We send our condolences to Liam and both families at this awful time.



WEEKEND PROJECT

Colourful still life

If it's too hot and bright outside this weekend, why not retire to the cool and shade of your home and challenge yourself to shoot a colour still life image? You may think that you need a load of kit to achieve this – especially various bits of lighting – but you'll be pleasantly surprised at how simple it can be.

The first thing to do is to choose your subject. Flowers are an obvious choice, but don't discount anything else that catches your eye; even simple objects can take on a whole new appearance when looked at differently. Be bold with your choice of subject, and you're likely to get striking results. Once you've picked your item, and you're happy with it, make some space on a table and then set to work creating your still life.

1 Bold, colourful backgrounds that are either in harmony with your subject, or create a striking contrast, are key. Experiment with different backgrounds, from simple sheets of card to Perspex and textured material.

2 There's nothing to stop you using flash to control the lighting, but natural light can be just as effective. Shoot near a large window using reflectors to bounce light around your subject. Don't discount black boards to stop light leaking.

BIG picture

Drawing attention to the relationship between war and photography

 Debates on the relationship between war and photography are lengthy. Many feel that creating beautiful images within the arena of war somehow dilutes the issues, while others feel that engaging images draw an audience's attention. The ongoing conflicts in the Middle East are a perfect example of this discourse. In this image by Atta Kenare, a child looks on as Iranian mourners attend the funeral of Mohammad Hamidi, Hasan Ghafari and Ali Amrai. All three of the deceased were members of the Islamic Republic's Revolutionary Guards and were reportedly killed in Syria. According to the official IRNA news agency, the three men had been killed in fighting against the Islamic State jihadist group.

Words & numbers

War is like an ageing actress: more and more dangerous and less and less photogenic

Robert Capa

War photographer and photojournalist (1913-1954)

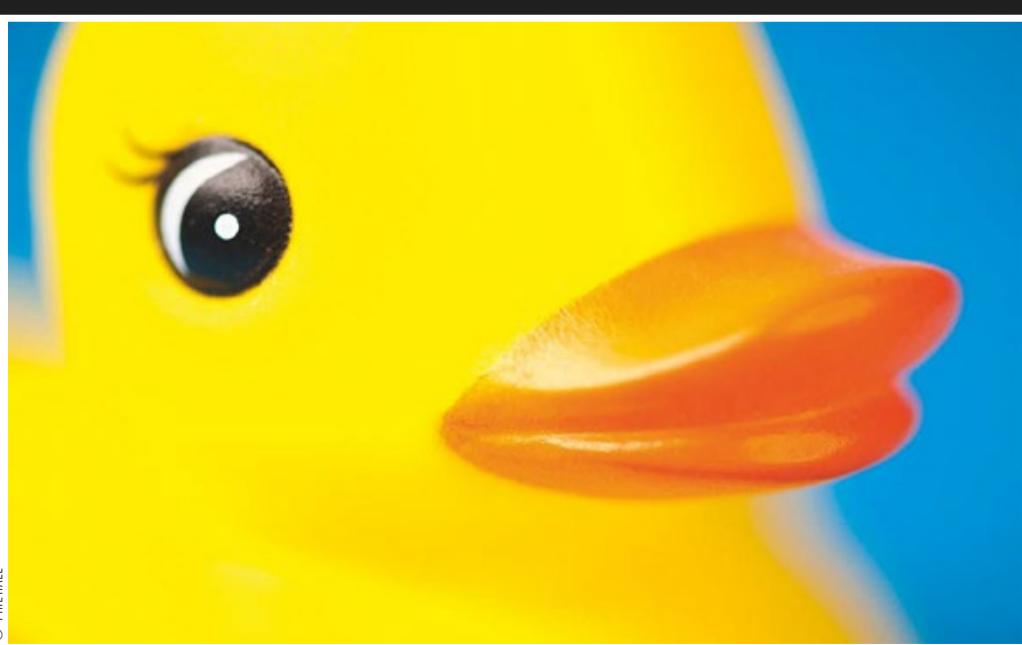
200 thousand

Number of signatures on a petition, gained after just 10 days, against a controversial EU proposal to extend restrictions on photos of public buildings across Europe. Visit www.change.org



3 Rather than working on a single composition, work hard to look for interesting angles from the same subject – get three shots you're happy with and you can then think about creating a still-life triptych.

4 Depending on what you end up shooting, a macro lens may be desirable, but in most cases not necessary. A fast 50mm prime lens is always a great choice. While you may want to handhold your shots, think about using a tripod.



© PHIL HALL



AP at centre of online furore

AP's web team was at the centre of a separate viral photo drama when a staff member's image won massive public exposure within minutes of being posted on popular online community website Reddit. The viral iPhone 5S image of a cheeky fox peeping through a hedge was captured by Paul Nuttall, a digital production manager at AP's sister title *What Digital Camera*, who discovered a fox family living in the hedges at the bottom of his garden in Tooting, south London.

At the time of writing, Paul's picture had garnered over 2.5m views. Within hours' of posting, the photo was viewed hundreds of thousands of times and fast became a trending story, rising to become Reddit's most popular post of the day.

A stunned Paul said, 'We were a bit cautious of their presence at first, but they've caused us no trouble and are a nice addition to a city garden.'



Amateur's photos of a crow riding a bald eagle go viral

YOU couldn't make it up – or perhaps you could. Weasel on woodpecker, and raccoon on alligator, have been swiftly followed by a crow riding on a bald eagle.

Phoo Chan, the amateur photographer behind the astonishing shots, lives in California, USA.

His amazing images, captured in Seabeck, Washington using a Canon DSLR, have caused an internet sensation in recent days.

AP tracked down Phoo who told us he captured the once-in-a-lifetime pictures using a Canon EOS-1D X, with a Canon EF f/4L IS II USM lens and 1.4x III extender.

The cheeky crow had chosen to hitch a ride on the eagle as it searched for early morning food – landing on the eagle's back 25ft in

the air in a brief encounter lasting no more than a few seconds.

Phoo, 50, explained that he began taking wildlife photos in November 2010 and has never taken a photography course in his life.

'I'm mostly self-taught and [learn by] sharing info with photographer friends,' he told AP.

In manual mode Phoo used a shutter speed of 1/1,600sec at f/7.1 aperture, shooting at an ISO of 320 with centreweighted average metering and auto white balance.

Writing on 500px.com, Phoo said: 'Crows are known for aggressively harassing other raptors that are much bigger in size when spotted in their territories and usually these "intruders" simply retreat without much fuss.'

'However, in this frame the crow didn't seem to harass the bald eagle at such close proximity and neither did the bald eagle seem to mind the crow's presence invading its personal space.'

'What made it even more bizarre was that the crow even made a brief stop on the eagle's back as if it was taking a free scenic ride, and the eagle simply obliged.'

Phoo said his wildlife photographer heroes include Alan Murphy, Tin Man Lee and Conrad Tan.

What next? Perhaps if a baby baboon jumps on the back of a reluctant rhino the cavalcade of bizarre animal taxi rides can take a well-earned refreshment break.

To view more of Phoo Chan's bird photography visit www.500px.com

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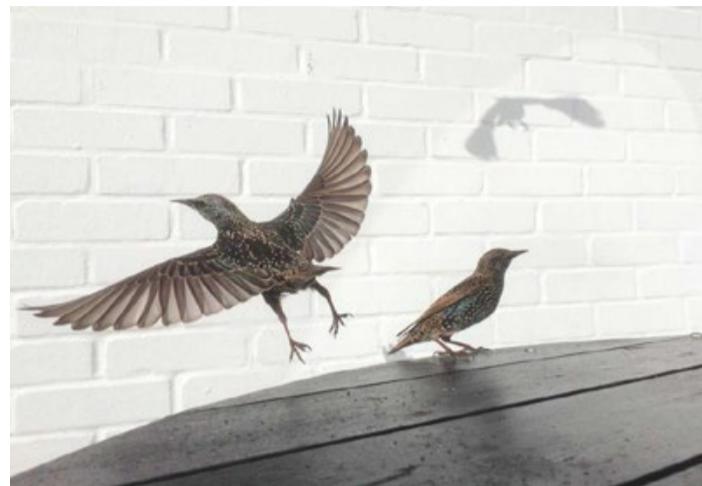
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My photo was not faked, says iPhone winner

A UK photographer, who was among three winners of the iPhone Photography Awards 2015, has defended the competition after reading complaints online that the entries appear over-manipulated.

David Craik, a wildlife photographer from Surrey – who won second place in the Photographer of the Year category – said: 'I've read comments from people around the world about high levels of post-processing being used on the images, and "that image looks fake" – but actually the [competition organisers] vet all the original files individually to make sure the photo hasn't been manipulated, and only extremely minor edits were used on this image'



using a very basic iPad app, to make it competition-worthy.'

The awards' creator, Kenan Aktulun, told AP that judges request original image files from entrants if they haven't already submitted them. 'We ask people to send their original, unedited, versions. Unless we can confirm the camera data,

we don't accept it,' he said.

He also explained that entrants are barred from using desktop editing programmes such as Photoshop, but are allowed to edit their shots using basic iPhone and iPad apps.

Craik sent organisers all the original image files from his three-shot burst. Visit www.ippawards.com

Drone in plane near-miss

DRONE users have again been warned to apply common sense after a drone-like device came within 50ft of a plane coming in to land at Heathrow Airport.

The pilot of an A320 plane spotted a black object that appeared to be 'propeller-driven' while on their approach path to the airport on Sunday 15 March.

The drone user has not been traced.

An official report of the incident released by the UK Airprox Board states: 'The object passed about 50ft directly above the aircraft. ATC [air traffic control] were informed. The pilot did not take avoiding action, and the approach was continued to a normal landing. The pilot stated that the object



It's not known what type or make of drone was involved

was rectangular in shape and appeared to be propeller driven, "like a drone".

The near-miss incident took place at 9.23am, at a height of 1,700ft.

Last summer, a suspected drone was spotted just 20ft from a passenger jet, also at Heathrow Airport.

A spokesperson for the Civil Aviation Authority (CAA), repeated warnings that users should apply

common sense. 'It's clearly irresponsible to fly a drone close to an airport or anywhere near other airspace users, that includes aeroplanes, helicopters, as well as things like para-gliders and hang-gliders.'

CAA rules state that drones must not be flown within controlled or restricted airspace, or an aerodrome traffic zone without the permission of air traffic control.

For the latest news visit www.amateurphotographer.co.uk

Get up & go

The most interesting things to see, to do and to shoot this week. By Jon Stapley

EVERYWHERE



SWPP July competitions

The Society of Wedding and Portrait Photographers and its affiliates run regular monthly competitions on a variety of themes, and this month there are competitions for panoramas and aerial shots. You don't need to be a member to enter.

Ongoing (monthly), www.swpp.co.uk

EDINBURGH



Bailey's Stardust

This hugely popular exhibition makes a stop at Edinburgh's Scottish National Gallery in time for festival season. A rich and comprehensive survey of the English portrait photographer's achievement, it's absolutely not to be missed.

From 18 July
www.nationalgalleries.org

EVERYWHERE



EEF photography competition

£5,000-worth of Canon gear is up for grabs for the image that best captures modern British manufacturing. With separate professional and amateur categories, it's worth a try.

Deadline 30 September
www2.eef.org.uk/photo/

DUNDEE



New Work from Old Fellows

A joint exhibition between Stan Farrow and Neil Scott showing off their still life and abstract work will be on display at the Discovery Point café on the waterfront in Dundee, Scotland throughout the summer.

Until 8 October
www.stanfarrowphotography.co.uk/exhibition
www.neilscottphotos.co.uk

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At a glance

- 20.2-million-pixel, 1in BSI CMOS sensor
- 25-600mm equivalent, f/2.8-5.6 lens
- ISO 125-12,800
- 30-1/2,000 sec shutter
- 5.9 fps shooting
- Full HD video recording
- Wi-Fi and NFC
- £799



Canon PowerShot G3 X

Michael Topham examines the all-new PowerShot G3 X – Canon's superzoom compact camera that features a 1in back-illuminated CMOS sensor

 BACK at the Photokina photography trade fair in 2014, Canon disclosed it would be making a PowerShot camera with a 1in sensor and long optical zoom. Keeping to this promise, Canon recently announced the PowerShot G3 X – a superzoom compact camera with a fixed lens. It looks set to challenge other long-zoom contenders on the market, such as the Panasonic Lumix DMC-FZ1000 and the Sony DSC-RX10 II. Indeed with its 25x zoom, the G3 X offers the longest lens we've yet seen in front of a 1in-type sensor.

Key Features

The G3 X inherits innards from the PowerShot G7 X, featuring the same 1in back-illuminated CMOS sensor with a resolution of 20.2 million pixels. This sensor is partnered alongside Canon's DIGIC 6 image processor to provide an ISO range of 125-12,800 and allows

the camera to shoot a continuous burst at up to 5.9fps. Autofocus uses a 31-point contrast detection system with single, continuous, Servo AF/AE and touch AF modes all available.

However the main caveat is that the G3 X lacks a built-in viewfinder. Like the PowerShot G1 X Mark II, it does accept Canon's EVF-DC1 electronic viewfinder via the hotshoe, but this is never quite the same as having it built into the camera. It's available as an optional extra, but requires you to splash out an extra £200 for the privilege. Another optional extra many users may want to consider is the lens hood and filter adapter kit, which will cost £40.

More advanced users will appreciate the G3 X's capability of shooting in raw format, and for added control the lens control ring can be assigned to different functions to make quick adjustments on the fly. Those aspiring to get creative with video can record Full HD

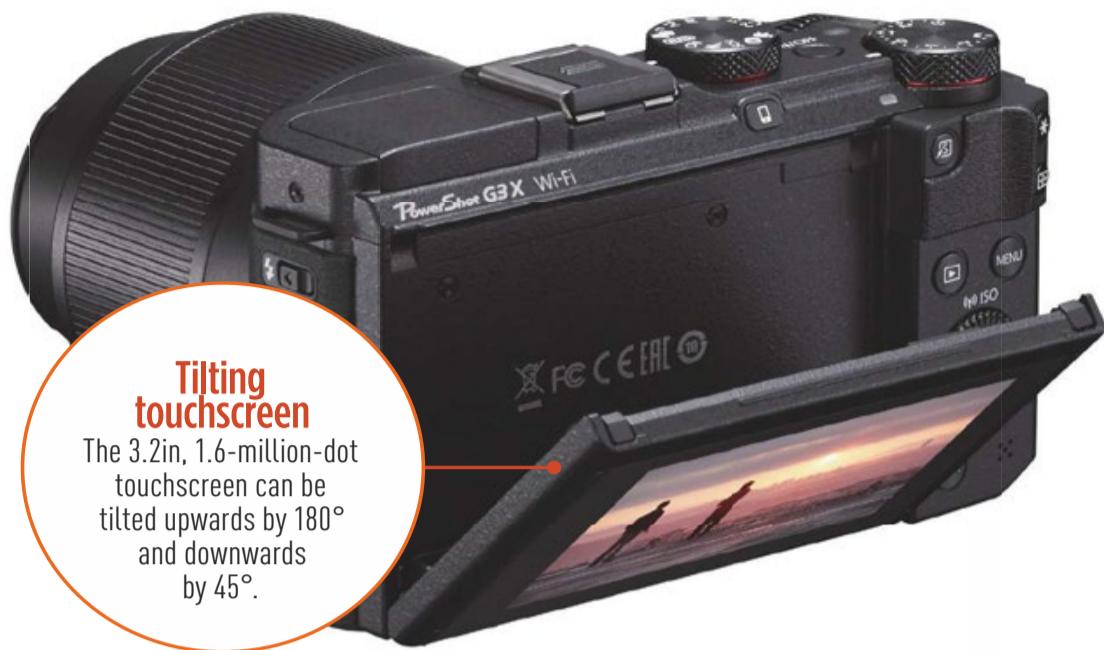
(1920x1080) footage with variable frame rates from 24p up to 60p. As well as a live HDMI output that allows you to view footage on an external monitor as you shoot, there's a mic port and headphone jack built in.

Another useful feature is the addition of Wi-Fi/NFC connectivity. This works with Canon's Camera Connect app for both iOS and Android, allowing users to transfer images to mobile devices and control the camera remotely. It's intuitive to use, and offers plenty of manual control.

As for power, the G3 X accepts the same NB-10L battery as the Canon PowerShot SX60. Unfortunately this only offers a mediocre stamina of 300 shots on a single charge, reducing to just 240 shots when using the EVF-DC1.

First impressions

Although the G3 X shares many of the G7 X's internals, it's a bulky camera by comparison. The well-proportioned grip feels nicely sculpted in the hand, and the shutter button and zoom lever are conveniently positioned for quick access with your index finger. Meanwhile the exposure compensation dial at the

**Tilting touchscreen**

The 3.2in, 1.6-million-dot touchscreen can be tilted upwards by 180° and downwards by 45°.

corner of the body lends itself to being controlled using your thumb.

As we've come to expect from Canon, the responsive touchscreen adds to the shooting experience. Not only can it be used to quickly select the focus point, it makes changing settings and navigating through menus a breeze.

The lens protrudes a long way from the body, giving plenty of space to support the camera in your left hand. Like other superzooms, the 35mm equivalent focal length is marked on the top of the barrel to indicate the lens position. A test against the stopwatch revealed the zoom extends from its widest setting to full telephoto in just 2.4secs – a highly impressive speed considering the huge focal length it has to cover. Zoom operation is smooth and silent, and from our initial hands-on, focus speed seems impressively quick.

The size, weight and feel of the

camera lends itself to being raised to the eye to help stabilise it. The first time I picked up the camera I found myself offering it up to my eye, only to find myself lowering it again having not immediately realised the EVF was not already attached. For many, myself included, an EVF that attaches via the hotshoe is never the same as having one built-in and not only does adding the EVF-DC1 bring the total price close to a four-figure sum, the fact it's not integral means it's more susceptible to being forgotten, lost or damaged. Considering the 600mm equivalent lens, adding an integrated viewfinder as found on the G3 X's main competitors would surely have been a better option. The opportunity of producing a G3 X kit with the EVF-DC1 and optional lens hood bundled in was discussed with Canon, but we'll have to wait to find out if this idea comes to fruition.

Zooming in: 25-600mm equivalent lens

DIRECTLY in front of the sensor lies the G3 X's headline feature – its 25x optical zoom that's equivalent to 24-600mm in 35mm terms, and has a respectable maximum aperture of f/2.8-5.6. Comprising 18 elements in 13 groups, it includes one double-sided aspherical UA lens, two single-sided aspherical UA lenses, one single-sided aspherical lens, two UD lenses and one Hi-UD lens.

With such a long focal length on offer, the G3 X is well equipped for those who prefer the convenience of having an all-in-one lens that's suitable for shooting everything from wide landscape vistas to close-up wildlife shots. At the widest end of the zoom the lens has a minimum focusing distance of 5cm, which increases to 85cm at full telephoto. To aid steady shooting and

minimise the effect of hand shake caused by any sudden movements, the G3 X is also equipped with a 5-axis dynamic image stabiliser, with intelligent IS that automatically adapts the stabilisation to match the scene.



The G3 X can use the £200 EVF-DC1 external viewfinder

For the latest news visit www.amateurphotographer.co.uk



Nikon unveils new DX travel zoom lens

NIKON has announced a new 16-80mm f/2.8-4E VR zoom and a pair of super-telephoto lenses. Designed to be compact and light, the AF-S DX Nikkor 16-80mm f/2.8-4E ED VR weighs 480g and is due out this month, priced £869.99.

The lens brings 'pro-grade technology' like an electromagnetic diaphragm and a fluorine protective coating to the DX range for the first time.

Edward Allinson, junior product manager for Lenses & Accessories at Nikon UK said, 'The incredibly light and compact build of the lens means it's the ideal travel

companion, and is guaranteed to capture stunning images.'

Features also include a minimum focus distance of 35cm and an M/A focus mode switch for 'seamless manual focus override'. The 17-elements-in-13-groups optic contains four ELD elements.

Nikon also has a new pair of super-telephoto lenses, namely the AF-S Nikkor 600mm f/4E FL ED VR (£9,649.99) and AF-S Nikkor 500mm f/4E FL ED VR (£8,149.99). Also due out this month, these lenses are claimed to be 25% and 20% lighter than their respective predecessors.

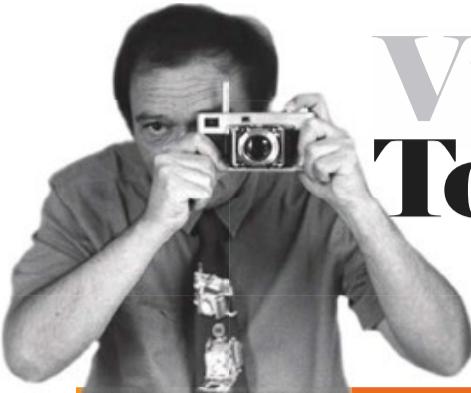
No Olympus Air A01 for Europe, yet

OLYMPUS has launched its long-awaited Air A01 smart device in the USA following its debut in Japan, but there are currently no plans to bring it to European markets.

Claimed to deliver OM-D image quality, the Olympus Air A01 is a 16MP Micro Four Thirds compact camera without a built-in screen. Instead users compose their shots using a smartphone or tablet, which communicates with the camera via Wi-Fi and dedicated OA Central app.

Olympus America claims it 'transforms smartphones... into cameras that enthusiasts can enjoy'. However, it seems we'll have to wait a while for it to reach the UK, as Olympus Europe appears unsure how popular it will prove in the wake of lens-style cameras launched by other manufacturers.





Viewpoint Tony Kemplen

A cute, compact 35mm Vesna, built in the Soviet Union in the early '60s, turns out to be 'a bit of a brute'

I've always had a fondness for old Soviet cameras, and when I was getting into photography in the 1970s the Zenit SLRs and Zorki rangefinders, together with the Lubitel medium-format twin-lens reflex, gave an affordable entry into serious photography. If your interest was maintained it also allowed you to move on to something more expensive with some confidence.

The sheer quantity of Zenits and Zorkis that were sold here in the UK is evident in the frequency with which they turn up at boot sales and online, but it wasn't until the fall of the Iron Curtain that some of the lesser-known models, those not made for the export market, found their way west.

The Vesna is a cute, compact little number, but nevertheless has a very usable set of features. Like many Soviet cameras it's built around variations of the same core components, the T-22 40mm triplet lens and six-speed shutter, found in several of my Russian models, and despite their age I've yet to have one of these shutters fail. Focusing is by scale, but the depth of field marks around the lens barrel reassure you that once you get beyond around f/8, there's plenty of leeway for guesswork. The distances are marked in metres, and curiously, the makers have chosen to use 1.4, 2, 2.8, 4, 5.6 and 11m. Maybe a knowledgeable reader can explain what, if any, purpose was served by using the conventional f-number series as measurements. Another unusual feature is the frame size that, at 24x32mm, gives an aspect ratio of 3:4, instead of the 2:3 we expect from 35mm.

There is a neat little case, but it is made



Torn sprocket holes on the film from the Vesna

from very stiff leather-effect plastic material, making it awkward to use and mocking the concept of the ever-ready case – in fact, I opted to leave it behind. Unlike most 35mm cameras, the Vesna lacks a take-up spool, so you need to supply an old 35mm spool, or use an empty cassette that has the advantage of allowing you to remove and process the film at any point with the loss of only a frame or so. The Russian word *Vesna* translates as 'spring', but it's clear that this one (below), with a serial number dating it to 1963, is in the autumn of its days.

I don't want to be too unfair to the Vesna, as its shortcomings are probably due to age and poor maintenance rather than inherent design faults, but even allowing for that it can be a bit of a brute. After a few exposures I started to hear the unmistakable sound of tearing film when I wound on, and resigned myself to some 'interesting' images. When I developed the film I could see the sprocket holes were shredded in places, as seen above. But please note, I fully entered into the spirit with a sailor's cap sporting the name 'Sevastopol' in Cyrillic characters.

Tony Kemplen's love of photography began as a teenager and ever since he has been collecting cameras with a view to testing as many as he can. You can follow his progress on his 52 Cameras blog at 52cameras.blogspot.co.uk. You can also see more photos from the Vesna at www.flickr.com/tony_kemplen/ sets/72157648637855828



Do you have something you'd like to get off your chest? Send us your thoughts in around 500 words to the address on page 20 and win a year's digital subscription to AP, worth £79.99

New Books

The latest and best books from the world of photography. By Oliver Atwell



Matterhorn: Portrait of a Mountain

By Nenad Saljic, Orada & Galerie Rigassi Bern, £59.81, hardback, 120 pages, ISBN 978-3-033-05067-9.

Buy it online at www.nenadsaljic.com/books



THERE are some images that can only be captured by someone with a personal, and borderline spiritual, understanding of a location. Swiss photographer Nenad Saljic's new book contains perhaps one of the best recent examples of this. Within its pages there are a variety of 'portraits' of a single location: Switzerland's famous (and at times infamous) Alpine mountain, the Matterhorn. Nenad trained as a mountaineer and caver in his youth, and it was these experiences that caused him to fall deeply in love with, as he terms it, 'nature's most ancient textures, forms and shapes'. In this volume we find a visual document of Nenad's love affair with the Matterhorn. Each image shows the vast formation under a variety of weather conditions – mist, storm, sun and rain. A pure overwhelming beauty suffuses every image. *Matterhorn* is an incredible and perfect encapsulation of the sublime. ★★★★

New York

By Serge Ramelli, teNeues, £50, hardback, 176 pages, ISBN 978-3-8327-3253-0



ON A SIMILAR note to the review above, we find Serge Ramelli revealing his love of New York. While you could be forgiven for dismissing what appears to be yet another volume revelling in the well-worn sights of The Big Apple, there's something undeniably unusual about Ramelli's photos. If New York is the city that never sleeps, you wouldn't know it from the images here – there's something oddly unpopulated about them. Even when people are present, they are sparse. It's almost as if Ramelli has discovered a weird alternative New York, a version that remains undiscovered by the human race. That's the real key of these pictures: for once, you can drink in the architecture and atmosphere of the city without your eyes being pulled around by the crowds. Of all the books on New York out there, this is pretty far up the ranking. ★★★★



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Mark Bauer

Mark Bauer has been a full-time landscape photographer for more than a decade and takes inspiration from the landscapes in the southwest.
www.markbauerphotography.com



Mastering depth

Mark Bauer shares his advice on this fundamental technique of creative photography

Correct exposure and focusing are the cornerstones of good photographic technique. Related to focusing is one of the fundamentals of creative photography: depth of field. This is the zone of sharpness in front of and behind the actual plane of focus, and it has a huge impact on the character of an image. For

example, you can enhance the feeling of depth in the scene by keeping everything sharp from foreground to background. Alternatively, a shallow depth of field can be used to blur distracting backgrounds or force attention onto a particular part of the frame. But to achieve either of these effects, the obvious question is, how do we control depth of field?

There are three main factors that affect depth of field in images. Lens choice is the first one, as the wider the lens, the more inherent depth of field it has. Second is aperture, and the smaller the aperture (bigger f-number), the greater the zone of sharpness. Finally, choosing the correct point of focus is vital when you want to extend depth of field. You can shoot with an ultra-wide lens stopped down, but if you focus in the wrong place then either your foreground or background might end up not being sharp enough.



An understanding of how your lens choice, aperture and focus will influence depth of field will help you produce images that are razor-sharp from foreground to background



When there is no foreground object particularly close to the camera, focusing about a third of the way into the scene – in this case, just in front of the second set of posts on the jetty – will give you all the depth of field you need in a landscape

distance at which depth of field is maximised for a given aperture and focal-length combination. While it can be tricky getting to grips with the principles, it's perfectly possible to apply the technique without getting bogged down in the theory.

Circle of confusion

For those keen to understand the theory, however, you need to start with the 'circle of confusion' (CoC) – and no, it's not a group of photographers trying to understand hyperfocal distance! The circle of confusion is the maximum size at which an unsharp 'blob' will appear to the human eye as being indistinguishable from a perfectly focused point. For 35mm film or 'full-frame' sensors, this is usually stated as 0.030mm, and



With key elements of the composition close to the camera, precise control of depth of field becomes critical. Setting the hyperfocal distance allows you to maximise sharpness throughout the image

Front-to-back sharpness

One of the most commonly asked questions regarding depth of field is, 'How do I get front-to-back sharpness?' The usual advice for beginners is to focus a third of the way into the scene. This is because depth of field extends twice as far behind the point of focus as in front of it. However, this method lacks precision, as it's often difficult to exactly locate 'a third of the way in' – and it doesn't take into account variables such as the focal length of the lens you're using, or the aperture

you've set. Nonetheless, it can work surprisingly well in many situations.

Where it does fail is when there is an object close to the camera that needs to be kept sharp along with the background. In these cases, a more accurate way of calculating and controlling depth of field is needed – namely, focusing using the hyperfocal distance.

Photographers often assume this is a complicated technique when, in fact, it's really easy to use. Put simply, the hyperfocal distance is the precise focal

Hyperfocal distance focusing was used here to ensure sharpness was present all the way through the image



assumes a maximum print size of about 10x8in (about 8x enlargement for 35mm). Different formats will require more or less enlargement to achieve the same-sized print, and so different circles of confusion are used. The circle of confusion is part of the equation used to calculate depth of field and hyperfocal distance, so knowing what CoC has been used in the calculation can be useful.

For once, practice is easier than theory, and there's no need for complex calculations using the CoC, as there are many pre-prepared charts available, as well as several smartphone apps. To put hyperfocal distance into practice, just check the focal length and aperture you've set, find the hyperfocal distance from your chart or app and then manually focus on an object at this distance. (You could use the distance scales on your lens, but these are not always very detailed or accurate on modern zooms). Everything from half the hyperfocal distance to infinity will be within the zone of sharpness. For example, if you shoot with a full-frame camera at f/11 on a 20mm lens and set a hyperfocal distance of 1.2 metres, depth of field will extend from 60cm to infinity.

HYPERFOCAL DISTANCE CHARTS

Below are two sample charts. One for crop-sensor (APS-C) DSLRs and the other for full-frame DSLRs, showing hyperfocal distances for popular focal lengths.

Hyperfocal distance crop (APS-C) sensors

FOCAL LENGTH

APERTURE	12mm	15mm	17mm	20mm	24mm	28mm	35mm	50mm	70mm	100mm	135mm
f/8	3.2ft	5ft	6.4ft	8.9ft	12.6ft	17ft	27ft	55ft	105ft	218ft	395ft
f/11	2.3ft	3.5ft	4.5ft	6.2ft	9ft	12ft	19ft	39ft	75ft	155ft	280ft
f/16	1.7ft	2.5ft	3.3ft	4.4ft	6.4ft	8.6ft	14.5ft	27ft	54ft	110ft	198ft
f/22	1.2ft	0.9ft	2.3ft	3.2ft	4.5ft	6ft	9.5ft	19.2ft	38ft	77ft	140ft

Hyperfocal distance full-frame sensors

FOCAL LENGTH

APERTURE	16mm	20mm	24mm	28mm	35mm	50mm	70mm	100mm	135mm
f/8	3.8ft	5.6ft	8.0ft	11ft	17ft	35ft	68ft	138ft	250ft
f/11	2.6ft	3.9ft	5.8ft	7.8ft	12ft	25ft	48ft	98ft	178ft
f/16	1.9ft	2.9ft	4.0ft	5.5ft	8.5ft	17.5ft	34ft	70ft	125ft
f/22	1.4ft	2.0ft	2.9ft	3.9ft	6ft	12.5ft	24ft	49ft	89ft



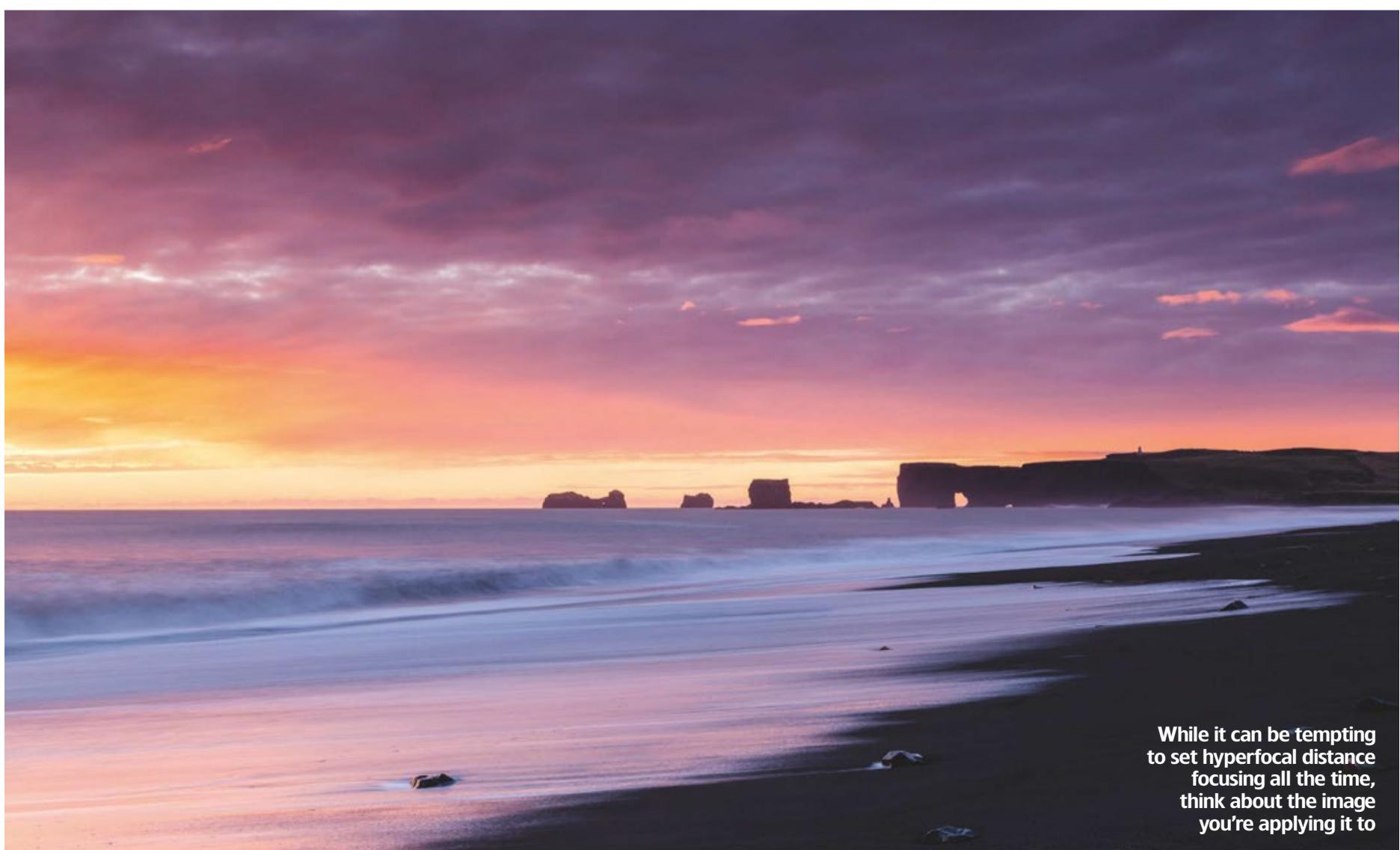
Don't get carried away

Occasionally, those new to the technique will routinely set the hyperfocal distance for every landscape shot they take, even if there's nothing in the immediate foreground. While this doesn't necessarily lead to bad results, it can mean that you're using depth of field where you don't need it – in the foreground –

and that the background, while acceptably sharp, could be sharper.

When there is no close foreground interest, it's better to check what the hyperfocal distance is and then, if the nearest object to the camera is beyond the hyperfocal distance, focus on that object, or just slightly beyond it.

When there is no foreground interest close to the camera, it's best to ignore the hyperfocal distance and focus on your main subject instead



While it can be tempting to set hyperfocal distance focusing all the time, think about the image you're applying it to



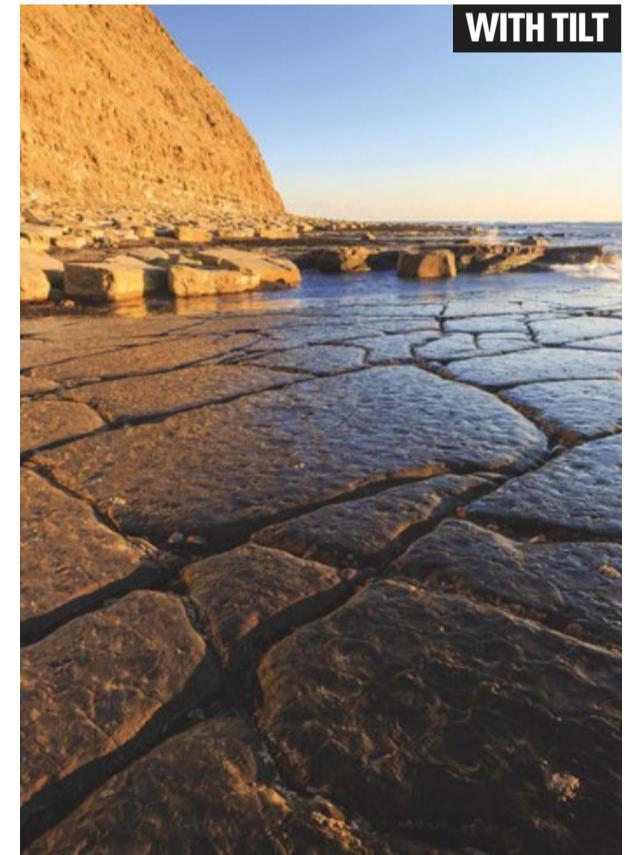
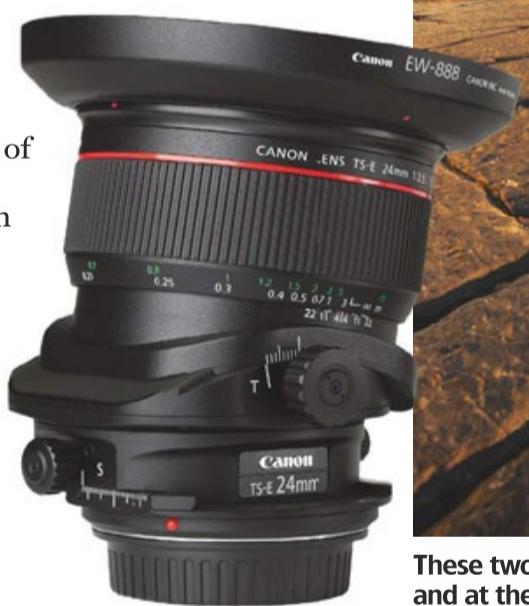
Check calculations

There's no rule that says you have to have front-to-back sharpness in landscape images, so don't be afraid to experiment with limited depth of field. Use the depth of field preview button to see the effect before you take the shot

Before pressing the shutter, you'll need to check that your depth of field calculations are correct. Looking through the viewfinder won't show you the depth of field, as the aperture stays wide open until the shot is taken. Most cameras have a depth of field preview button, however, which enables you to manually stop the lens down to the shooting aperture. The problem is that with the aperture stopped down, there is less light coming through the lens and the viewfinder image might be too dark to be useful. Live view works better as the screen brightens to compensate for lower light levels. Camera manufacturers implement live view in different ways, though, so check how yours works. For example, Canon's live view operates in the same way as the viewfinder, with the aperture wide open. To check depth of field, press the depth of field preview button. With other makes, such as Nikon, the live view image is shown stopped down to the taking aperture, so there is no need to use the preview button.

Tilt-and-shift lenses

With foreground interest close to the camera, sometimes the only way to get enough depth of field is to stop the lens right down, but the resulting image may end up soft due to the effects of diffraction. One way around this is to use a tilt-and-shift lens. These are specialist lenses, which have movements that allow you to tilt the plane of focus, thus extending depth of field. This means that you can shoot at the lens's 'sweet spot' of around f/8, while still obtaining front-to-back sharpness.



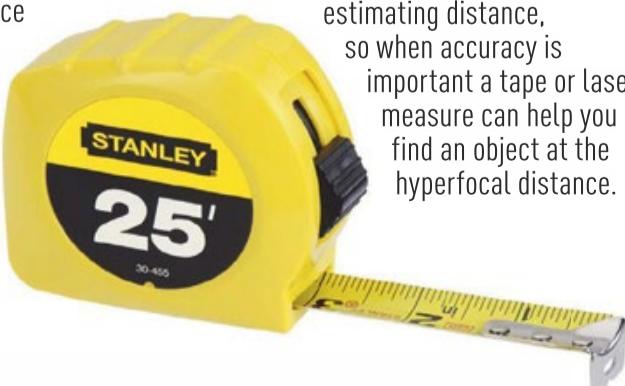
These two images show the difference between shooting at f/8 with no tilt (left), and at the same aperture and focused on the same point with tilt applied (right)

KIT LIST



Prime lenses

To make setting the hyperfocal distance really easy, use prime lenses with clear distance scales – you won't even need to use a chart.



Tape measure

Not everyone is good at estimating distance, so when accuracy is important a tape or laser measure can help you find an object at the hyperfocal distance.



Tripod

A tripod not only helps you with setting precise composition, but also means you know exactly where the sensor plane is when calculating or measuring distances.



Shooting with an aperture of around f/11 will often provide the best compromise between depth of field and diffraction

Diffraction

When light passes through a lens aperture, the light striking the edges of the diaphragm blades get scattered, or diffracted. This reduces image sharpness. As the aperture is stopped down, a greater percentage of light is diffracted and the image becomes progressively softer. Therefore, although depth of field increases, overall image sharpness also deteriorates, so as a general rule it's best to avoid extremely small apertures such as f/22.

However, in practice there are a number of factors that can influence the effects of diffraction, such as the number of aperture blades in the lens, and therefore how good the aperture circle is, and the subject matter of the image. You also need to consider that other factors, such as shutter speed, will influence the aperture you choose. Generally, though, an aperture of around f/11 often provides the best compromise between achieving sufficient depth of field and reducing diffraction.

AP

USING HYPERFOCAL DISTANCE



1 Set up your shot, making sure you get a good balance of foreground and background elements in the composition.



2 Check the focal length and aperture you've set, then find the hyperfocal distance on your chart or smartphone app.



3 Remember to switch to manual focus, so that the camera won't refocus when you press the shutter.



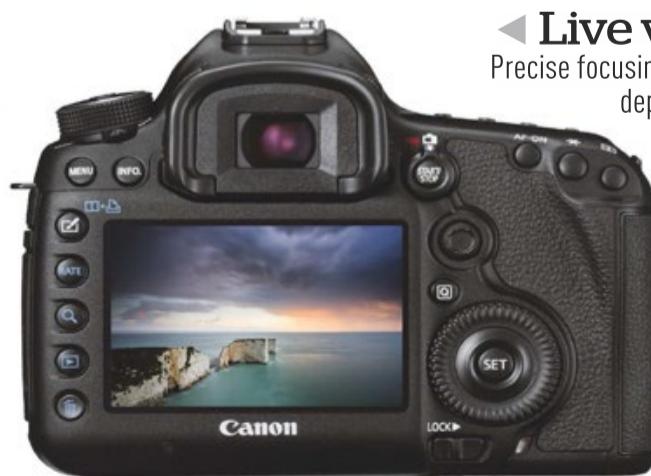
4 Choose an object at the hyperfocal distance and focus on it. Live view is excellent for accurate manual focusing.



5 Once you've taken the shot, zoom in on the review image and check sharpness in the foreground and background.



6 The final image should display perfect front-to-back sharpness running through the entire picture.



Live view

Precise focusing is essential for getting the depth of field you want, so if your camera has a live-view facility, use it.

Hyperfocal distance chart or app

Unless you really enjoy complicated maths, use a chart or phone app to help you find the hyperfocal distance.

35mm (0.03)		F-STOP	F-STOP	SUBJECT DISTANCE	FIELD OF VIEW	
		feet	inches			
Near Limit:		6.35	ft			
Far Limit:		23.56	ft			
Depth of Field:		17.21	ft			
Hyperfocal:		17.25	ft			
In Front:		3.65	ft			
Behind:		13.56	ft			
In Front %:		21				
Behind %:		79				
F-stop [All Stop]		13.5	14.0	16.0	18.0	19.0
Focal Length [39.6' H x 27.0' V x 46.8' D]		7	48	49	50	51
Subject Distance [10.0]		7	8	9	10	11
Tele		12	13	14	15	16
None		1.4x	1.5x			
Focal Length: 50mm						
Subject Distance: 10.00 ft						



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LETTER OF THE WEEK

Foxy lady

I really enjoyed Luke Massey's piece on photographing foxes (*Fox hunt*, AP 27 June). I've been following a family of foxes that lives near my local rail station for the last two or three years. Last year I saw small cubs near their den beside the tracks, but this year I was even luckier.

I was on my way to a meeting one evening (luckily with my Canon compact in tow) and as I took a look up the platform I could see that the vixen was returning home. I approached carefully, but since the evening sun was shining directly into my eyes I couldn't see her and her cubs properly until I was really close. I couldn't believe my luck – she was suckling the cubs. I managed to get some shots in the magical moment before something startled the vixen and they all took flight. I've since seen them playing with the vixen or each other



© CAROLE TYRELL

and feel privileged to have been around them at such close quarters.

Carole Tyrrell, Kent

Even in our towns and cities there are some amazing opportunities to observe and photograph wildlife. You just need to know where to look and have a little patience – Richard Sibley, deputy editor

Win!

With ultra-fast performance, the new Samsung 16GB EVO SD card, Class 10, Grade 1, offers up to 48MB/sec transfer speed and has a ten-year warranty.
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Service master

I've recently purchased the Tamron SP 150-600mm f/5-6.3 zoom lens for use with my Canon EOS 5D Mark III and am very pleased with the combination. I read a number of reviews before purchasing, but found AP's to be most helpful and borne out by my experience. It is however a heavy lens/camera combination and although using a tripod and ball head works, I felt that a gimbal head was a better solution.

Having done some research, I came across the Lensmaster unit made by Rob Hardy in Grimsby. I spoke with Rob to clarify what would suit me better, as I have some difficulty with my hands. He recommended their RH 2 unit, which I ordered just after midday on a Friday. It arrived 24 hours later and is well made and very robust.

I was very pleased with it,

but had a query about which lens-plate of the two supplied would suit the Tamron best. Within an hour of emailing Rob, I had a phone call from him explaining how best to set things up. I also mentioned that I wanted to purchase a second small lens-plate to use with another telephoto lens.

Without hesitation he volunteered to send me an additional plate at no extra cost. I cannot commend Lensmaster, and especially Rob's service, highly enough and it's great that it's also a traditional British company.

**David Hunt,
Nottinghamshire**

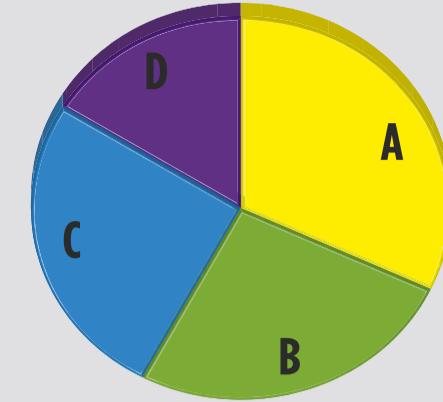
It's excellent that we have small businesses in the UK producing some fantastic products. And the customer service offered by most is exceptional – Richard Sibley, deputy editor

Manual labour

There's a much easier answer to George Mercer's question regarding camera manuals (*Technical support*, AP 27 June). Just phone Old Timer Cameras on 0170 727 3773 and they'll take payment for any manual you want, printed in either booklet form or with ring binder, and post it within a day or two. Visit www.oldtimercameras.com

Pamela Taor, via email

Old Timer Cameras is indeed a great source for printed manuals. Another option is the Print My PDF website www.print-my-pdf.com, which Old Timer Cameras actually recommends for some of the newest models. You can upload a PDF manual and get it printed in various sizes, including pocket-friendly A6 – Andy Westlake



In AP 27 June, we asked...

Would you be interested in a camera with a 50+-million-pixel sensor?

You answered...

A No, I have no need for files that large	32%
B Yes, but only if the price was right	26%
C No, I'm happy with what I have	26%
D Yes	16%

What you said

'No, it's depressing that we seem to be back in a pointless pixel race. I would much rather have fewer pixels and better noise performance at very high ISO in low light'

'I'd certainly be interested, but I don't think I'd have much use for it. Processing huge files is time consuming, eats memory, and I seldom need that much detail'

'Since I started getting into bird photography, I find cropping is essential and I run to the limit with a 16-megapixel, 1.3in sensor. My Canon EOS 5D is getting old and needs replacing. The idea of having one body that can be both a Canon EOS 5D Mark III, a 1D Mark IV and a 7D Mark II in resolution terms – with a bonus of higher resolution for special situations – at a price that is less than I paid for a 1D Mark IV is quite interesting'

'Yes, why not if I could afford it?'

Join the debate on the AP forum

This week we ask

Would you ever buy a camera with an EVF?

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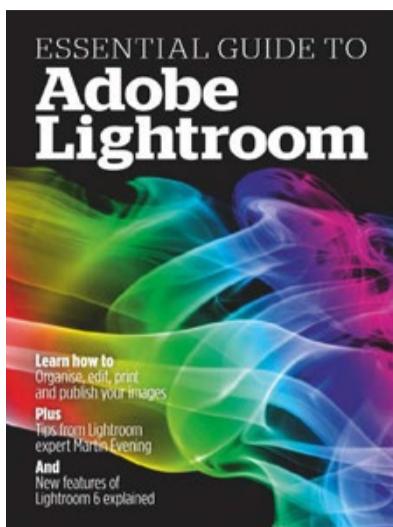
Guess the date



Every other week we post an old AP cover on our Facebook page and all you have to do is guess the issue date (day/month/year). To guess the date of this cover (above), head over to www.facebook.com/Amateur.photographer.magazine. Forum members can also enter via the Forum.



The camera in AP 27 June was the Sony A550. The winner is George Parapadakis, from Buckinghamshire whose correct guess was the first drawn at random.



Lightroom reading

In a week when I eventually lose patience with my old image processing software and buy a copy of Adobe Lightroom as well as Martin Evening's Lightroom book, you publish your *Essential Guide to Adobe Lightroom* supplement (with AP 4 July) on that very subject.

Your timing could only have been better if you'd published it a week earlier, as then I would have been able to take advantage of the 35% discount offer on the book!

**Phil Aisthorpe,
South Yorkshire**

Perfect timing! Hopefully you can put your newly learnt skills to use this summer – Richard Sibley, deputy editor

Just strapping

I want to thank Andy Westlake for his review of the 1901 Fotografi Maitani strap (Accessories, AP 27 June).

I'd been looking for a strap for my 'pocket' camera, a Fujifilm X20. I was very impressed by the 1901 Fotografi range and have bought the 'Steichen' leather camera strap. It's superb quality and great value for money, plus Fotografi's Mark Lewis even fitted body-protection pieces to it. It's every bit as good as the much more expensive Luigi's strap from Rome that I have on my Fujifilm X-Pro 1. As an added bonus, it's also really nice to support a British photography business in this way.

Mark Preston, Devon

We're happy to support small UK photo businesses wherever we can, especially when the products are this good – Andy Westlake

Pixel power

Being the proud owner of a Canon EOS 5D Mark III, I read with great interest your excellent test of the Canon EOS 5DS R (AP 27 June).

There is one aspect of these cameras though that reviews haven't really commented on: the cost. Has anybody thought

about what incredible value for money these cameras represent? A 50-megapixel Hasselblad H5D-50 costs in the region of £36,000 – that's £720 per pixel, versus Canon's £60 per pixel.

Hasselblad owners may well scoff at this, but how many professional studio photographers will buy a new Hasselblad when faced with this alternative? These new high-resolution cameras from Canon, Nikon and Sony are amazing value and fantastic technology, now within reach of amateur photographers everywhere.

**Wayne Eardley,
Staffordshire**

Absolutely true! The Hasselblad may have some other advantages, but when it comes down to sheer resolution, the Canon 5DS cameras are certainly a match for them. The gap between professional studio cameras and those within the reach of amateurs is becoming smaller and smaller. For the professional it must be getting harder to justify the cost of owning a medium-format digital camera, especially when you consider the Pentax 645Z is around £7,700 including a lens – Richard Sibley, deputy editor

Contact

Amateur Photographer, Time Inc. (UK), Blue Fin Building, 110 Southwark Street, London SE1 0SU
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MACRO PHOTOGRAPHY



'Make Slime Not War'
Canon EOS 60D,
100mm, 1/200sec at
f/5.6, ISO 100

A bug's life

Nadav Bagim doesn't just photograph insects, he places them in charming imaginary worlds. **Tom Smallwood** finds out more





'Sunrise Friends'
Canon EOS 60D,
100mm, 1/200sec
at f/5.6, ISO 100

Macro insect photography is a well-established genre and camera club contests up and down the country are likely to attract at least one carefully taken close-up of an insect. Israel-based photographer Nadav Bagim has spread his wings wider by photographing insects within carefully crafted imaginary worlds. The context in which they are placed recalls sci-fi, dreams and fairy tales, but however you interpret their milieu the images are utterly charming. Seeing bugs presented in this, very sweet and innocent, way is rather moving, and makes you regret all the times you've accidentally squashed a snail or swatted a fly. Nadav calls his project 'Wonderland' and explains how it came about.

Bug fantasia

'I started "Wonderland" about four years ago,' he explains from his home in Ramat Gan, Israel. 'I've always loved nature and as a child spent most of the time with my nose inches above the ground tracking and observing little insects and animals. That's why the first lens I bought was a macro. I started photographing about seven years ago – I'm self-taught and a big fan of trial and error. I now teach photography in several schools and lecture about macro photography and the tiny world around us.'

Before starting on 'Wonderland', Nadav worked on a project called 'Aphids', an attempt to create a new world of miniature landscapes (real and surreal) and work out the perspective and artificial lighting set-ups needed to achieve that

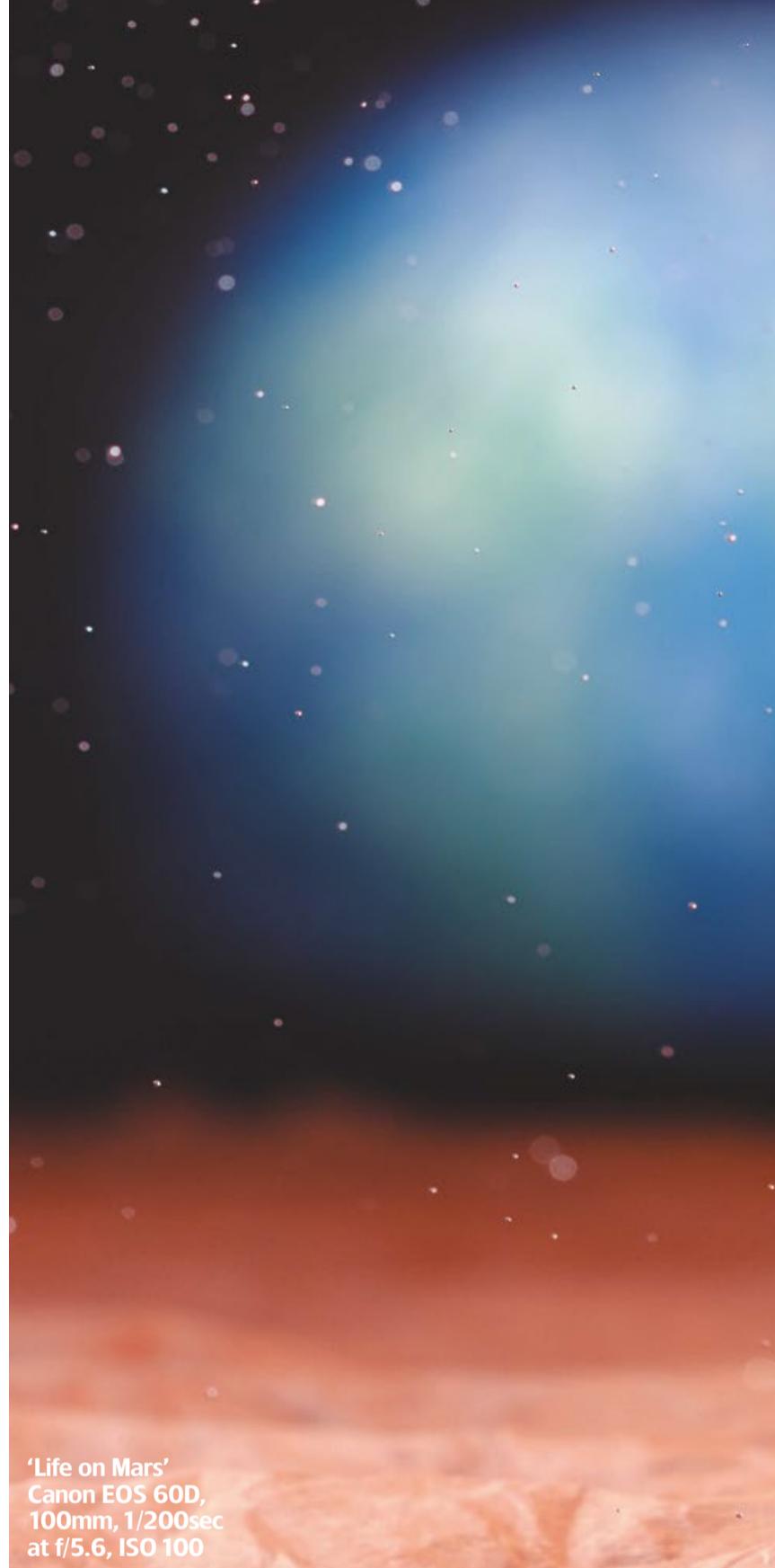
effect. 'I played around with it and when I started getting results, it gave me the inspiration to continue and develop the series, while bearing in mind my affection for sci-fi, fantasy and animated movies,' he explains. 'As the series progressed, it became very clear to me what kind of an atmosphere I wanted to create. But I was always wondering where the project would go next.'

Nadav built the sets for his insect fantasias on nothing more elaborate than a kitchen table. He describes how the set-up usually takes an hour or two, depending on how complex it is. 'I use simple household objects or other items you can find lying around. So the ground is made of natural ingredients like vegetables, flowers, leaves, tree barks, moss and the like, which I arrange depending on what I'm trying to achieve.'

Super-fly lighting

Meanwhile, the vibrant backgrounds are achieved using mundane but colourful items, such as supermarket bags. Nadav takes advantage of the shallow depth of field in macro photography to transform them into richly hued, dreamy backdrops. 'As for the particles in the air, those are created by spraying water droplets in mid-air,' he explains.

While the set construction may be simple, the lighting set up is rather more complex, but not massively so. Nadav uses up to four Yongnuo YN560 manual flashes and says, 'they are absolutely great and the price is even better.' He also favours 30cm translucent studio umbrellas, light stands and



'Life on Mars'
Canon EOS 60D,
100mm, 1/200sec
at f/5.6, ISO 100

'Smiling Gecko'
100mm, 1/200sec
at f/5.6, ISO 100





How Nadav shot 'Life on Mars'

Nadav explains how he set up and shot one of his favourite images, a praying mantis on Mars

It's in the bag

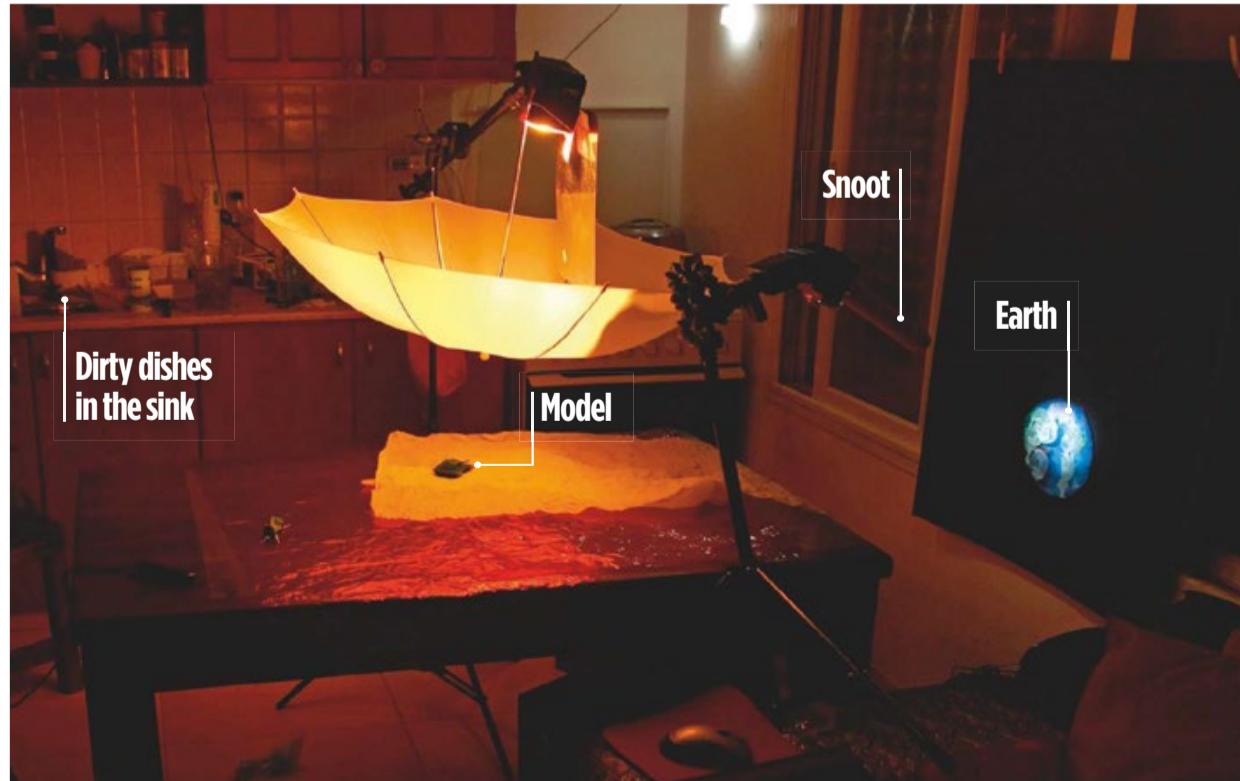
1 Although this was a planned shoot, I wasn't really focused on how I wanted to shoot it, and the first big problem was how to make red Martian sand. I couldn't find a material that had both the right colour and the right sandy texture. I ended up shooting white crepe paper and gelled the flash with an orange plastic bag. That gave the whole scene a Martian atmosphere.

Lighting up the Earth

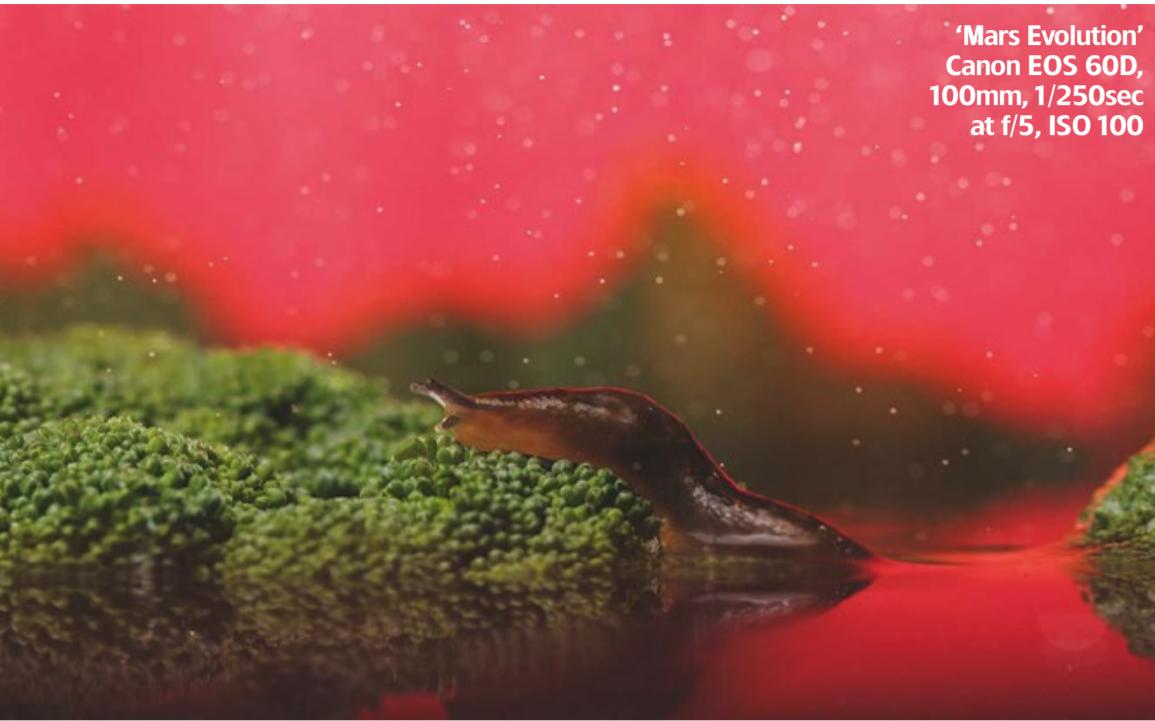
2 Earth was made from a mash-up of different coloured nylon bags – a round blue one for the Earth and small ones for the continents. It was lit with a small flash and to create an Earth phase (just like a moon phase). I used a snoot to create a spotlight and light up just part of the planet.

Drop kicks

3 To create the illusion of stars in the background I used the simple technique of water droplets sprayed in mid-air.



Nadav's surprisingly simple set-up to create his beautiful 'Life on Mars' shot (top)



'Mars Evolution'
Canon EOS 60D,
100mm, 1/250sec
at f/5, ISO 100

A flea in your gear

When it comes to the equipment needed for a photographic bug fantasia, Nadav's tools of choice are a Canon EOS 60D and a Canon EF 100mm f/2.8 Macro USM lens. 'I don't use editing software more than the average photographer, maybe even less. Sometimes the images require a little fine-tuning that mostly includes general brightness/contrast, white balance correction, noise reduction and a little cropping. But there is no change in the content of the photo.' Indeed, Nadav is adamant that none of his photos are a photomontage or comp job. 'There is no pasting in or cutting out objects, no selective colouring or saturation boosting or anything similar. The colours are real, the "snow" is real, and so are the insects, landscapes and the rest, they are all taken in camera. It takes a lot of time, effort and shutter clicks to synchronise all those elements together to a single moment in time, but the satisfaction you get when it all works is worth it,' he says.

Nadav uses a
Canon EOS 60D
and Canon 100mm
f/2.8 macro lens



➤ remote controllers for the flashes. 'All the equipment I use is relatively simple and cheap. We're not talking about high-end gear, so building yourself a set like this is pretty affordable, especially if you use eBay,' he says.

While Nadav has learnt a lot by setting up numerous insect shoots, he still has to do a lot of test shots, as he uses Speedlights rather than continuous lighting. He also uses light modifiers to get a specific light. 'The entire set is relatively small, so you have to be very accurate.'

Bug and Breakfast

Just in case you were wondering whether any bugs were hurt during the making of these images, Nadav assures us they were fine – he's yet to hear from any of their lawyers.

'The subjects didn't get scared by the lighting, but I didn't want to hurt them by using too much of a strong light. I used translucent umbrellas to soften the light and tried to place them far from the subject. I also tried to use a low power setting for the flashes so the light wouldn't be too strong,' he continues.

As for finding the subjects, Nadav looked no further than plants in his back garden. 'I actually had an agreement with them – it's called B&B or Bug and Breakfast,' he jokes. 'I spray sugar water on my garden plants and in return they allow me to photograph them.'

Nadav roped in snails, millipedes, ants, spiders, bees and even geckos, but reckons his favourite critter is the praying mantis. 'They are fascinating and very curious insects that always have an intelligent look on their alien faces. Their curiosity makes it very easy and fun to interact and play with them.'

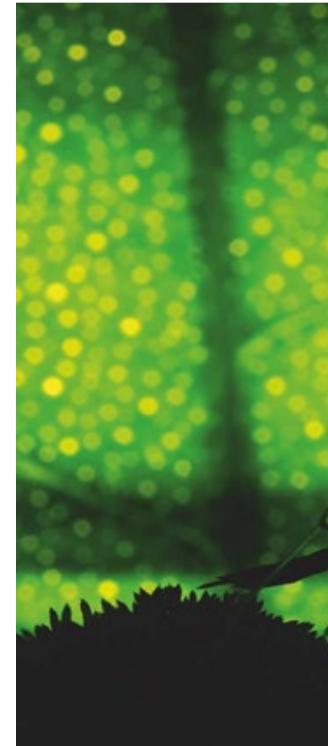


Watching a praying mantis hunt is amazing – they are very stealthy and stand still most of the time, but when they locate their prey, they wait for it to get closer and then lash out with remarkable speed to catch it. Their natural tendency to be still, combined with their curiosity, makes them perfect subjects.'

Pray as you go

Interacting with a praying mantis involves dangling a cotton swab in front of them, just as you would dangle wool in front of a cat. 'I make them chase it in order to get them to climb to where I want, and to make them stand in the position that I need for the shot,' says Nadav.

While some readers might feel uncomfortable about making a praying mantis perform in this way, there is something very sweet and

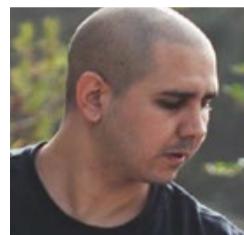




'The Prince'
Canon EOS 60D,
100mm, 1/200sec
at f/6.3, ISO 100



'The Widow' Canon EOS 60D, 100mm, 1/250sec at f/4.5, ISO 100



Nadav, 33, is a BSc student in Brain Sciences who lives in Ramat Gan, Israel. He started to take photography seriously seven years ago and became 'enchanted by its magic' after getting an SLR. Nadav is entirely self-taught and enjoys shooting nature, macro and landscapes, as well as many more objects and subjects that pop into his head. See www.aimishboy.com

innocent about how Nadav photographs his subjects. He also claims he has a higher purpose, to make us more mindful about taking care of his tiny colleagues and their environment. 'What I was doing in "Wonderland" was trying to reveal a different side to all those tiny creatures, and show them in a different light. As a nature lover, an animal lover and a vegan, I believe we need to co-exist; most of them are not harmful to us and we usually fear them due to all sort of wrong stereotypes. Since this project was published, I get a lot of emails from people telling me of experiences with all those tiny creatures and how they now see them in a different and positive light. That's very heart warming.'

As for his next project, Nadav is heading for the seaside. He says, 'Summer is here and I don't live far from the beach, so I'm planning on spending a lot of time on the shore with my camera and my lighting equipment and seeing what strange and wonderful creatures I can find there.'

AP



'Conductor' Canon EOS 60D, 100mm, 1/200sec at f/14, ISO 100



'Swirling' Canon EOS 60D, 100mm, 1/200sec at f/5.6, ISO 100

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*Quote by Moose Peterson - Nikon Ambassador and Wildlife Photographer



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In November 2014, Nikon Japan announced a very special limited-edition black and gold model of its Nikon Df camera. The new model was only available in Japan in limited quantities and was released by the end of the year. The body-only model was released in a limited run of only 600 units. The kit edition included a special gold version of the AF-S 50mm f/1.8G Nikkor in a 1,000-unit run. To pair with the limited-edition camera, Nikon also introduced a number of gold accessories, which include a gold shutter release AR-11G and a AN-DC9G matching strap.

With the Nikon Df Gold, Nikon opted for a much more subtle approach than they have done in the past with the Nikon FM Gold and Nikon FA Gold, only giving it a few gold accents where they would have the most impact. This subtlety also means Nikon's rendition is much more attractive and we are informed it was an immediate sell-out in Japan. Grays of Westminster are delighted to announce they have secured an example of this unique kit. NEW £5,000



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Fairfield reflections

The **Displace Filter** is often overlooked, but it can be a great tool for transforming irregular surfaces, as **Phil Hall** shows in this reflection technique

Tucked away among the plethora of Photoshop filters is Displace, which is perhaps one of the oldest filters in the programme's arsenal. Designed to allow you to place artwork realistically on an irregular surface, it is perfectly suited for overlaying text onto a brick wall, for example, and will ensure the text follows the contours of the bricks. This displacement mapping requires two elements – the image (or text) you wish to distort and the picture you want the first image to overlay (the displacement map). It works by interpreting the brightness value of greys in the map.

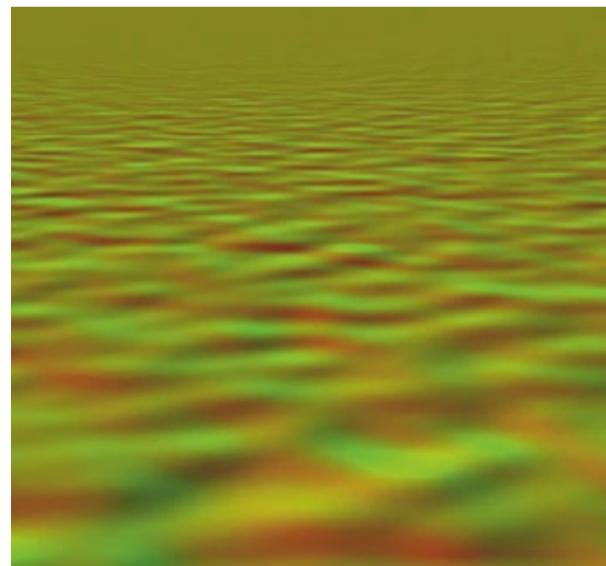
That's one way of using the Displace filter, but it can also be used to create a lifelike water reflection. This is achieved by making your own displacement map, which can then be applied to a flipped image so it appears as a reflection.

Things to consider

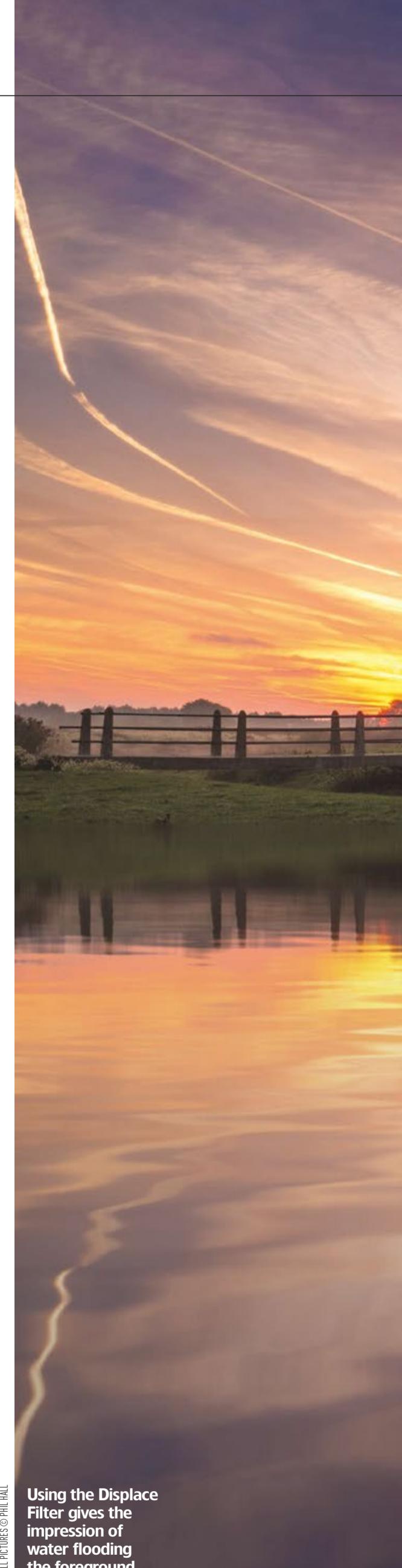
To achieve a successful result, you have to consider the image you use. Images from a higher viewpoint tend to look a little awkward, while those shot from a lower angle look more natural. As the image is going to be flipped, you need to look for a point where the two elements can be joined seamlessly so it won't look out of

place. You also need to think about the format of the image you pick – portrait format doesn't really work, because once the image is flipped you'll be left with a long, thin canvas.

As you can see from the shot we've used here, the angle is low and, thanks to the uncluttered foreground, the join between the images is quite natural. While this technique naturally lends itself to landscapes, don't be afraid to experiment with other subjects.



This Photoshop Displacement Map recreates water

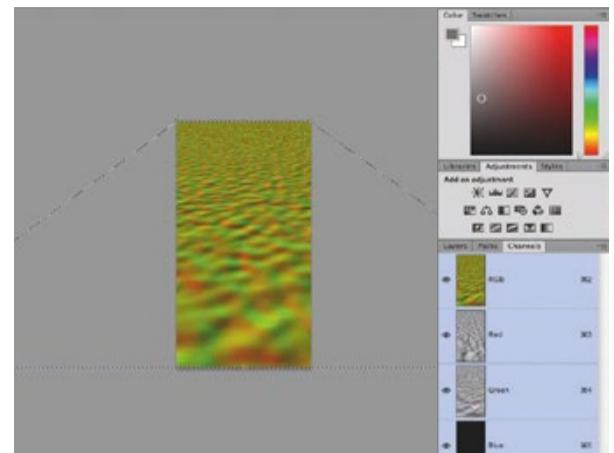
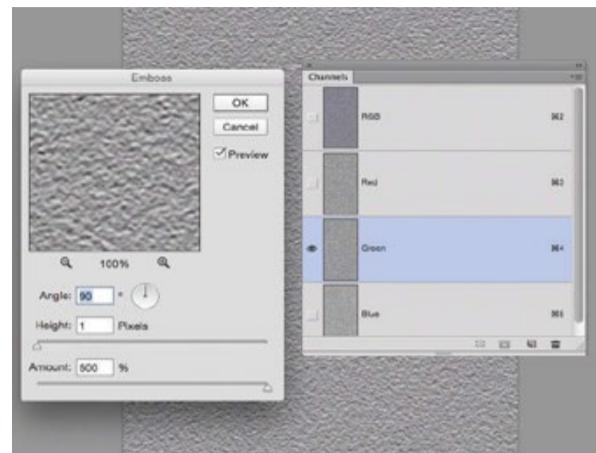
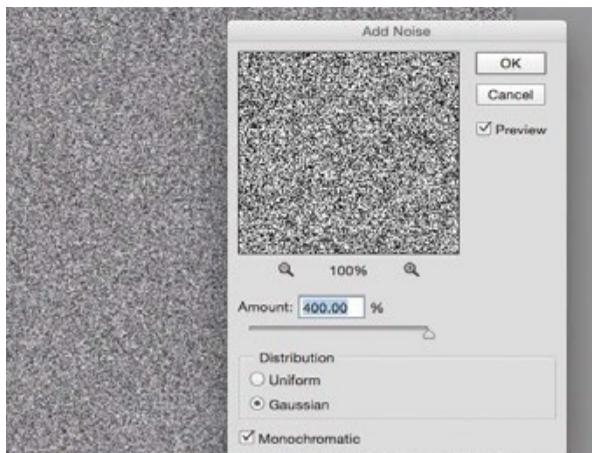


ALL PICTURES © PHIL HALL

Using the Displace Filter gives the impression of water flooding the foreground



STEP BY STEP



1 Displacement Map

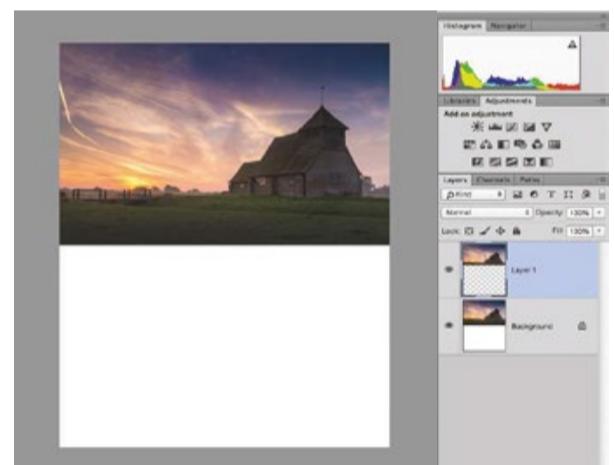
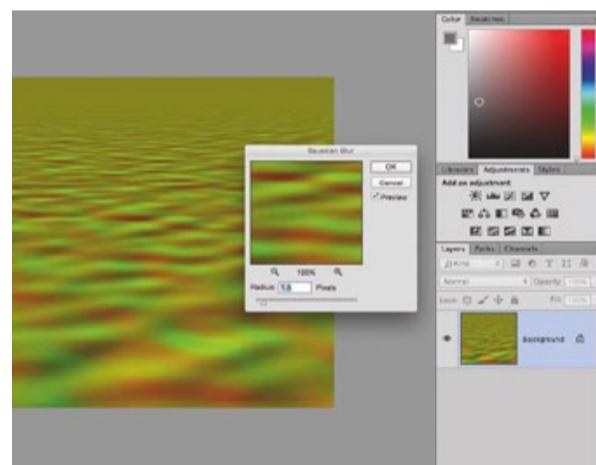
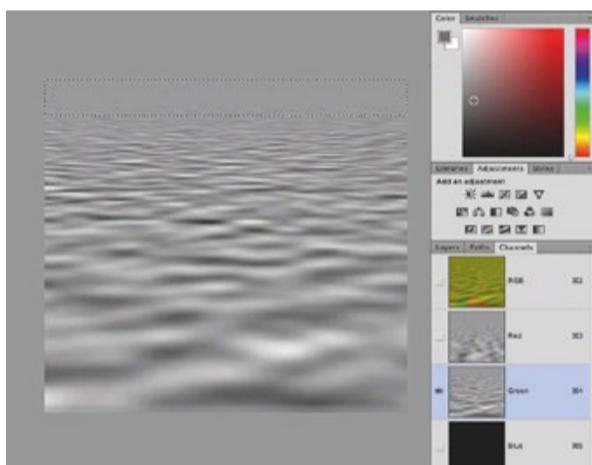
Go to File>New and create a new document at 1,000x2,000 pixels, in RGB mode with white as the fill. Once opened, go to Filter>Noise>Add Noise and in the pop-up box set the amount to 400% and Distribution as Gaussian, with Monochromatic ticked. Then go to Filter>Blur>Gaussian Blur and set the amount to 2.0px.

2 Emboss

In the Channels palette, select the Red channel, then Filter>Stylize>Emboss. Set the angle to 180°, height at 1px and amount to 500%. Then select the Green channel and Emboss again. This time set it to 90°, with everything else the same as before. Select the Blue channel and go to Edit>Fill and fill with black.

3 Transform

Select the RGB layer and then select the Layers palette. Go to Edit>Transform>Perspective, pulling a bottom corner outwards until the width is 600%. Hit return and repeat. Resize the image by going to Edit>Transform>Scale, setting the height to 50%, with the white space cropped to leave a 1,000px square file.



4 Add distance

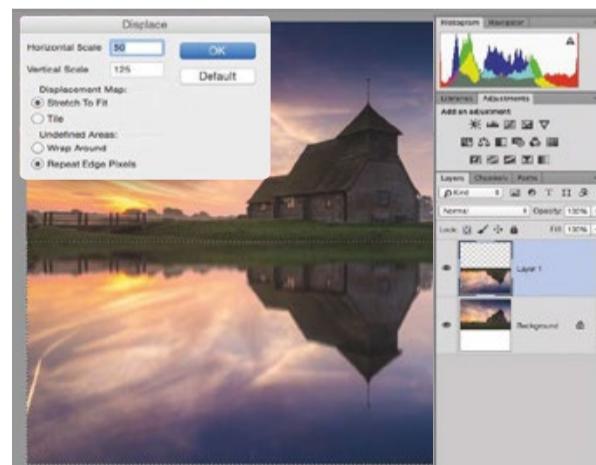
Return to the Channels panel, select Red, hit Q for Quick Mask Mode and draw a Gradient (white to black) from top to bottom before hitting Q again. Go to Edit>Fill and select 50% Grey. Select the Green channel, hit Q and draw another gradient – this time from the top down, but only by 15-20%. Hit Q and fill with 50% grey.

5 Blur and save

Select the Layers palette and apply a Gaussian Blur of 1.5px before saving. It's important to save it as a Photoshop PSD file, ensuring Maximum Compatibility is applied – if you're unsure, go to File>Preferences>File Handling. With the Displacement Map saved, we can now look at applying this to an image.

6 Select image

Open a suitable image to apply a reflection to and extend the Canvas (Image>Canvas and in the pop-up box, set the Anchor point in the top middle, setting the Height at 200%). Then make a selection, paying attention to the point you want the reflection to begin. Hit Ctrl+C and then Ctrl+V to paste into a new layer.



7 Flip

Go to Edit>Transform>Flip Vertical and then move it into position. Crop the image if necessary before holding down Ctrl and clicking on the flipped thumbnail in the Layers palette to make a selection. Go to Filter>Blur>Motion Blur and enter an angle of 90° and a Distance of 65px to soften the image.

8 Add ripples

Select Layer 1, hit Ctrl and click on the thumbnail. Go to Filter>Distort Displace. In the pop-up box, set the Horizontal Scale to 50 and Vertical Scale to 125 (you may need to experiment), select Stretch To Fit and Repeat Edge Pixels, then hit OK. Find where your Displacement Map is saved and watch the magic happen.

9 Finishing touches

To finish, go to Layer>New Layer, then select the Gradient Tool from the Toolbox, picking 'Foreground to Transparent' as the Gradient. Select a dark grey as your foreground colour and then apply a gradient from the bottom to the middle of the image. Change the Blending Mode to Multiple and reduce the Opacity.

Japanese refinement

Introducing the new fit + slim range from Marumi

The new Fit + Slim range of filters from Marumi boast a lightweight, ultra-thin frame that still enables the user to attach a lens cap securely, thanks to the newly developed high-pressure press method.

Manufactured in Japan, the Fit + Slim range is available as a Lens Protect filter, Circular PL filter and UV filter. These Eco-friendly filters are made of lead free materials with multi coating glass and satin finished frames for ultra low reflection.

For further technical information please visit www.kenro.co.uk



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Storm Over Tyneside

By Anita Nicholson

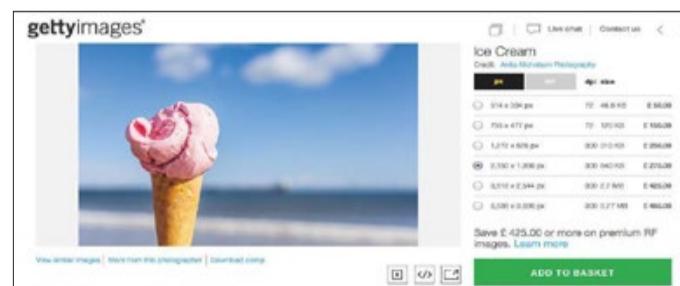


Anita Nicholson discusses the cloudburst scene she saw develop over Tyneside, and how photographers can generate income from their work. She talks to **Oliver Atwell**

On my way home on the Metro following an all-day conference in Newcastle in May, I could see that the sky to the north and east, over the coast, was looking very dark. My partner sent me a text to say they'd just had an intense hail storm at home. So, as soon as I reached my stop at West Monkseaton, I ran to my car and drove straight to the nearest stretch of coast. I parked in the first space I came to and dashed out to the edge of the small cliffs overlooking the beach at Whitley Bay. From there I could see the storm front coming in from the north as it approached St Mary's Lighthouse. The storm clouds were like nothing I'd seen before; it looked as if a tidal wave of cloud was sweeping off the coast and the light was right behind it. It wasn't exactly sunset, but the light was coming from that sort of direction. It backlit the clouds and gave the whole scene an amazing feel. The sheet of rain and hail overwhelmed the lighthouse and looked superb as the storm swept out to sea. I quickly grabbed my iPhone 4 and took a shot. There were several other

STOCK PHOTOGRAPHY

MORE than any other form of income from my pictures, I've gone down the stock photography route. I'm with Getty Images and Alamy Stock at the moment. I'm really not in this to make a fortune; instead it's been a nice trickle of income to help fund trips – and it beats having a bunch of my images going to waste on a hard drive. Admittedly, keywording is as boring as anything, but that really is all I have to concern myself with. We're very lucky to live in the digital age; you

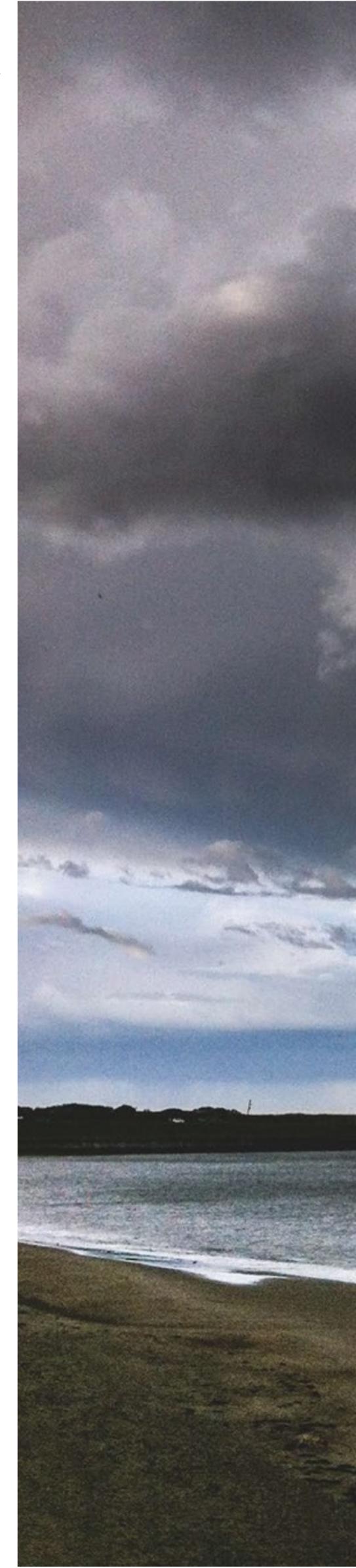


I was free to use the image on Getty and it's one that just keeps on selling and selling. I don't necessarily get a massive return from the images, but it's nice to be able to do something with them and put them out there in the world for people to see.

Bamburgh and Dunstanburgh.
I'm a bit of a geology geek so
I think those coastal areas
are wonderful.

I've recently been lucky enough to start working on commissions. I like selling my pictures and am over the moon that people would want to buy my shots. It's a huge compliment and I am very grateful. That said, I wouldn't say I'm a born salesperson – hence, I've also gone down the stock photography route (see below).

In the beginning I donated some of my images to charity – like the Samaritans who made a calendar out of my work, which helped them raise several thousand pounds. I also worked for a not-for-profit Northumberland development company called Arch. They liked my work and put some of my images in their boardroom, where a visiting marketing company saw them and offered me a commission to photograph the grounds of a prestigious estate in Falkirk. That meant I had to set myself up as a business. They took a chance on me and I went for it. That was the start of it all and has led to a variety of commissions.





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Reader Portfolio

Spotlight on readers' excellent images and how they captured them



Chris Dale, Nottinghamshire



Chris's passion for photography grew from his enjoyment of nature. 'I primarily photograph landscapes, often with man-made aspects included,' says Chris. 'I also enjoy using long exposures with clouds and water. This allows me to both show movement and, going further, helps to make things appear minimal and calm.' Chris intends to develop his skills at photographing people, particularly as he has a baby on the way and would like to use photography to preserve these cherished memories.

Dawlish Sea Groyne

1 Chris made sure to pick the right shutter to allow for just a subtle degree of texture to be left in the water
Canon EOS 400D, 10-22mm, 30secs at f/11, ISO 100, tripod, ND filter, shutter release

Canal Boat on Misty Trent

2 'The mist leads to a relatively flat, low-contrast light, but this allowed me to pull focus on the boats where the paintwork made them stand out,' says Chris
Canon EOS 500D, 17-50mm, 1/50sec at f/8, ISO 100

Reflections of Branches

3 By using a long lens (which he happened to have for birdwatching), Chris has cut out any distracting background elements
Canon EOS 500D, 70-300mm, 1/800sec at f/4, ISO 400





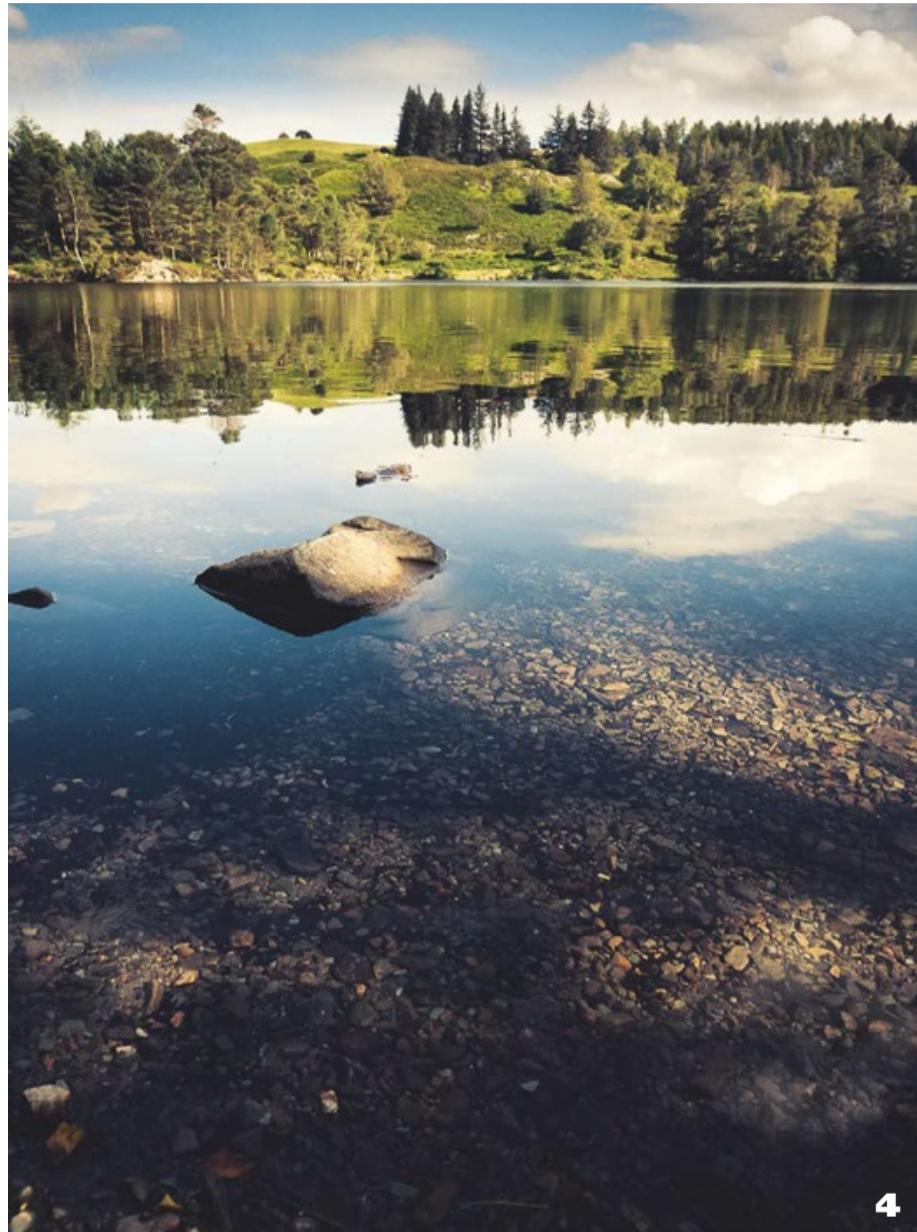
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The two **Reader Portfolio** winners chosen every week will receive a copy of

Submit your images

Please see the 'Send us your pictures' section on page 3 for details or visit www.amateurphotographer.co.uk/portfolio



4



5

Tarn Hows Reflections

4 This is a great example of how you can use reflections to create compositional balance

Canon EOS 500D, 17-50mm, 1/60sec at f/8, ISO 100, ND grad, polariser

Yorkshire Barn

5 Chris has challenged convention by placing his subject dead centre in the frame

Canon EOS 500D, 17-50mm, 1/125sec at f/11, ISO 200

Ribblehead Viaduct

6 By shooting in the evening time, Chris has captured some incredible side light and shadows through the arches of the viaduct

Canon EOS 500D, 17-50mm, 1/160sec at f/8, ISO 100



6



Earth and Sky

1 The patterned altocumulus clouds add a vital dimension to this image
Canon EOS 7D, 17-40mm, 1/320sec at f/8, ISO 100, tripod, polariser

Winter Mist on Dam

2 There are so many elements to enjoy here: the rich colours, the light, the location, even the ducks
Canon EOS 30D, 17-40mm, 1/60sec at f/11, ISO 100, tripod, polariser



Craig Gurnett, Australia



'Landscapes are my passion,' says Craig. 'I enjoy the solitude of watching the sun come through a misty morning, the play of light across the land and how the sky changes during the golden hours of dawn.' While Craig enjoys visiting famous locations to photograph, he gets more pleasure from capturing beautiful images in less obvious settings – an approach that was inspired by American landscape photographer, Marc Adamus.





Burnt Trees in Snow

4 'Devastating bushfires had passed through this area four months previously,' says Craig. 'When I heard the forecast for snow I thought there might be a unique photographic opportunity' Canon EOS 30D, 17-40mm, 1/5sec at f/11, ISO 100, tripod

A Glimpse of Light

4 In this image, Craig has waited patiently so that he can use the trees to frame and highlight the rising sun in the short time before it passes behind the ominous clouds Canon EOS 7D, 17-40mm, 1/40sec at f/11, ISO 100, tripod, polariser

Poplars on the Murray

5 While the scene is beautiful enough, the blankets of mist help elevate it to something even more engaging. The light bleeding in from the right is another great element Canon EOS 7D, 24-105mm, 1/50sec at f/11, ISO 100, tripod, polariser



4



5

Evening Class

Photoshop guru **Martin Evening** sorts out your photo-editing and post-processing problems

AFTER



Submit your images

Please see the 'Send us your pictures' section on page 3 for details or visit www.amateurphotographer.co.uk

BEFORE



Removing large objects

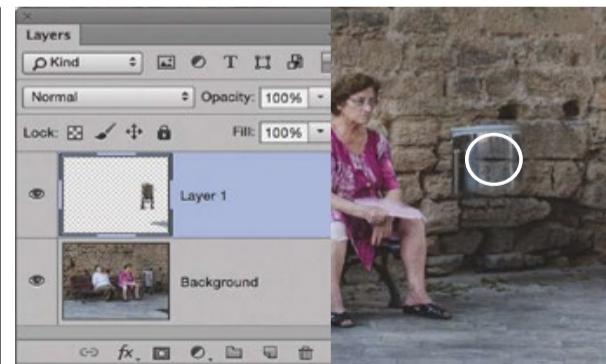
I REALLY liked this candid shot by Adrian Sadlier of an elderly couple, where the man is fast asleep and the woman appears to be lost in concentration as she cools herself with a fan. It's a shot that would work well in black & white. The main problem, of course, is all the modern street furniture, which is rather distracting. In the finished photo Adrian sent in I could see he

did an admirable job retouching these out, so I chose here to replicate this. The trick with such large objects is to retouch in stages. For example, as I removed the bin I attempted to reconstruct the wall in the background. To do this I studied the lines of the blocks and carefully sampled other sections of the wall to continue the shapes in the original image.



1 Apply Camera Raw adjustments

Not a lot of tone correction was required here. I opened the image in Camera Raw and applied a few Basic panel adjustments. I then applied two Radial filter adjustments to darken the area surrounding the people on the bench. I also cropped in to remove the tree.



2 Remove objects

Next, I opened the image in Photoshop and added a new empty layer. I primarily used the Clone Stamp tool to carefully remove both the grille in the foreground paving stones and the bin on the right. Because these were large objects to remove I carried out the retouching in stages, gradually cloning a bit at a time.



3 Convert to black & white

I selected both layers and chose Filter->Convert to Smart Filters. I then went to the Filter menu, chose Camera Raw Filter and in the HSL/Grayscale panel applied the slider settings shown here to convert the image to black & white. I also went to the Split Toning panel to add a split-tone sepia effect.



AFTER

Applying a cinematic crop

THE CROP aspect ratio of the photographs we take is often heavily influenced by the aspect ratio of the camera itself. With a digital SLR camera the aspect ratio is usually 3:2, while many medium-format cameras have a square format. This definitely affects the way photographers shoot. Personally, I like to shoot with a view of how an image might be cropped

afterwards – something that stems from my background as a commercial photographer where I always second-guessed how an art director might eventually want to use my photos. With this particular image by Javaid Akhtar there were a lot of interesting things going on, but their arrangement suggested it would best suit a cinematic crop format.

BEFORE



1 Crop the image

The first step was to apply a cinematic-style crop. The aim here was to apply a crop that hinged on the subject content and focused on the people in the image. There was also a chap on the left who had clearly spotted the photographer taking the photograph, so it helped to remove him from the scene.

2 Basic panel adjustments

Having done that, I went to the Basic panel in Camera Raw and clicked on the Auto button to apply an auto tone adjustment. This mostly lightened the image. I followed this by making a few further tweaks to the Highlights, Shadows, Whites and Blacks sliders to fine-tune the settings.

3 Add localised adjustments

Lastly, I added a Graduated Filter to darken the top section of the image. I then selected the Adjustment Brush and applied a Lightening Brush adjustment to the darker areas like the bodies and faces of the people. In this case I set the Exposure slider to +1.3.



Clone Source panel

THE CLONE Source panel provides you with additional settings with which to control the tool behaviour when working with the Clone Stamp or Healing Brush tools. The main control you may find helpful in this panel is the Show Overlay box. When this is checked it allows you to see a preview of the source area within the destination cursor area. This can be particularly useful when cloning or healing details where you need to see

a preview before you click to apply the cloning. This is especially helpful as it can aid the alignment. However, sometimes the overlay can prove distracting, so I don't recommend you have it switched on all the time. The other useful option is the Rotation Angle field box. You can use this to adjust the angle of the clone destination relative to the source, which, for example, can help when retouching along a curve.



Martin Evening is a noted expert in both photography and digital imaging. He is well known in London for his fashion and beauty work, for which he has won several awards. Martin has worked with the Adobe Photoshop and Adobe Lightroom engineering teams over many years and is one of the founding members of a software design company. Visit www.martinevening.com

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ALMOST every new digital camera has the ability to record video footage, but for many photographers the transition from stills to moving images can be a daunting one. What exactly do all those recording formats mean? How do you set up the shutter speed for video? How do you focus the lens? What about recording sound? There are so many questions, and all of them need answering.

Thankfully, help is at hand from The Video Mode, a new website from the publishers of *Amateur Photographer* and *What Digital Camera*. The site offers comprehensive advice on shooting video – with tips ranging from the basics you need to know when starting out, to more advanced questions on shooting raw video footage. Plus, it'll feature insights and techniques from leading videographers, as well as camera and equipment reviews. Basically, The Video Mode has everything you need to help you get started recording video with your digital camera.

Shutter speeds and ND filters

When shooting stills, you can shoot at any shutter speed you like – or at least whatever shutter speed is appropriate for the effect you're aiming for and the environment you're working in. You can capture images right up to 1/8,000sec (if your camera has that function) right down to long exposures lasting a number of seconds. However, with video you're limited to a single shutter speed while recording, and that shutter speed depends on the frame rate you're shooting at.

Most of the time this will be either 24 or 25 frames per second (fps), and because of the '180° shutter-angle rule', which goes back to shooting on film, your shutter speed should be double your frame rate.

For example, when shooting at 25fps, your shutter speed should be 1/50sec. If your

camera can shoot at 50 or 60fps, your shutter speed should be 1/100sec or 1/125sec. The reason for implementing this 180° rule is that it helps to record video that contains natural movement.

If the shutter speed is too slow you'll get blurred movement, while if you shoot at a shutter speed that's too high the people's movements in your scene will look robotic or as if they were recorded in stop motion. Sticking to the 180° rule will give you the most natural movement.

Having to stick with a fixed shutter speed can feel limiting for those of us who are experienced in stills photography. If you're outdoors shooting at 1/50sec, at your lowest ISO and you want to use a wide aperture, you'll often find that the scene is overexposed. The natural tendency for a photographer is to increase the shutter speed, but because we can't do that when shooting video we instead have to use ND filters to reduce the amount of light entering through the lens.

For more about using ND



ND filters reduce light entering the lens, when you can't increase shutter speeds

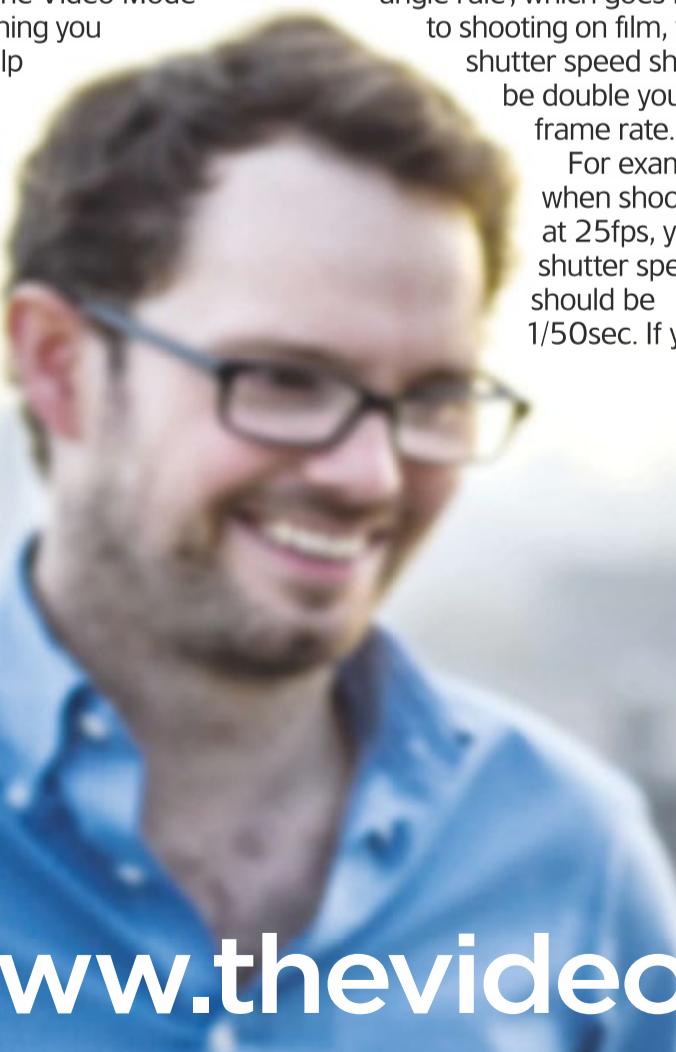
filters with video, visit www.thevideomode.com/filters

Recording sound

Unless you're planning to record a silent movie, audio recording and quality are some of the most vital components in the video-making process. No matter how good your pictures are, weak audio will make your efforts seem amateurish. In fact, great audio can disguise poor visuals.

Most cameras have a tiny microphone built in and these are fine for home videos and candid video recording, but built-in microphones aren't much good if you want to produce videos of a high standard.

Built-in mics are small and omnidirectional, which means they pick up sound from all around them. They're also very susceptible to the noise from wind. To improve the quality of



www.thevideomode.com



your audio, it's best to use external microphone options, and to use a good pair of headphones to monitor the sound you're recording. There are many different types of microphones available, and which you use will depend on what you are recording.

Watch our video



External microphones can help improve your sound quality

demonstration of the different microphones that are available for recording audio at www.thvideomode.com/audio

Keep it steady

A wobbly camera is annoying – not to mention amateurish – to watch, so keep the camera steady while filming. Use a tripod or monopod for shots that are fixed, while for roaming shots try to shorten the camera strap and pull it taut against the back of your neck, or shorten a monopod and keep it attached to act as a counterweight.

Although image stabilisation does a satisfactory job in some cameras and lenses, a device specifically designed to keep footage smooth and steady is a far better option. These can range in price from £20 shoulder rigs or stabilisation devices to equipments that costs thousands of pounds.

To read our reviews of video accessories, visit www.thvideomode.com/equipment



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Callum McInerney-Riley tries out the latest addition to Manfrotto's continuous lighting range

At a glance

- Lightweight continuous LED lights
- Rechargeable Li-Ion battery
- Tripod and hotshoe mount included

MANFROTTO Lumie LED lights make up a new range of compact, inexpensive and high performance lights for the enthusiast photographer. They sit below the high-end Manfrotto Spectra range of LED light panels.

Rather than having lots of small LEDs, the Lumie range features Manfrotto's new super-bright surface-mount LED technology. In simple terms that means fewer, bigger and brighter LEDs than the Spectra models. There are three sizes of the Lumie light available: the smallest is the Lumie Play that features three LEDs, while the medium-sized Lumie Art has six and the largest, the Lumie Muse, has eight. As you'd expect, the bigger the unit the more light power it's capable of outputting.

Rather than taking AA or AAA batteries, the Lumie series has a Li-Ion battery that recharges via Micro USB. This is a big advantage, as the unit is more convenient and considerably smaller when compared to similar AA/AAA battery-powered models. However, it's worth noting the rubber plug to protect the micro USB port isn't attached and is very easy to lose. But apart from this, the build quality is excellent.

Conclusion

For shooting small, still-life subjects or adding some light into product photography, the Lumie Play and Art are very useful tools, while the Muse is suitable for both these kinds of projects but is also big enough to act as a fill-in for larger subject matter like portraiture. The light coverage is very good and means that, for videographers and photographers alike, these are superb continuous lights.

Lumie Muse with an orange filter attached



Snap-fit attachments

Colour balancing filters are included and help adjust the colour temperature of the light. These simply snap-fit onto the front.



The 3-LED Lumie Play



Tripod and hotshoe mount

The Muse comes with a ball-and-socket mount, while the Play and Art have fixed forward-facing ones



OPTIONAL EXTRAS

Lumie Series Accessory Classic Filter Kit

£12.95

Designed to give the lighting more creative potential, this set of eight comprises primary green, red and blue and a blue and orange colour balance filter, plus soft, medium and heavy diffusers.



Lumie Series Accessory Portrait Filter Kit

£12.95

The portrait kit consists of eight filters and diffusers perfect for portraiture. These are pink rose, peach, Tuscan sunset, summer tan, amber sunrise, blush, and a soft and silk diffuser.



Lumie Series Accessory Multicolour Filter Kit

£12.95

This collection offers eight vivid coloured filters to use for creatively lighting a subject. Unlike Manfrotto's other filter kits it doesn't come with diffusers or colour balances.



Eyefi Mobi Pro 32GB

£65 • www.eyefi.com



Amateur
Photographer
Testbench
Recommended
★★★★★

IF, LIKE me, you own a camera that doesn't feature built-in Wi-Fi, but you like the idea of wirelessly transferring your images to a device – whether a smartphone, tablet, PC or Mac – you'll want to look at purchasing a connected memory card.

The Eyefi Mobi Pro 32GB SDHC memory card integrates the functionality of Eyefi's Mobi cards with the advanced features of its X2 Pro card. In a nutshell it's the company's most advanced SD card to date, and allows you to transfer raw and JPEG files wirelessly.

To use it, I first downloaded the Eyefi Mobi desktop software onto my MacBook (which took less than five minutes) and entered the activation code that came with the card. I then plugged the Mobi Pro card into my laptop using the supplied USB reader, and connected it to my home Wi-Fi network. This allowed me to use my home Wi-Fi to automatically upload images, including raw files, straight to my laptop.

Users will quickly discover the desktop software is fairly basic and that the Eyefi Mobi app (free from iTunes and Google Play) is more intuitive with options to browse images, create albums and quickly share via email or social media. There's also the option to setup an Eyefi Cloud account: a year's membership with unlimited storage space is included for free, after which it costs \$49.99 (about £32) per year.

Once you get your head around how the Eyefi Mobi Pro works and have started to integrate it into your workflow, you'll realise it's a very sophisticated device.

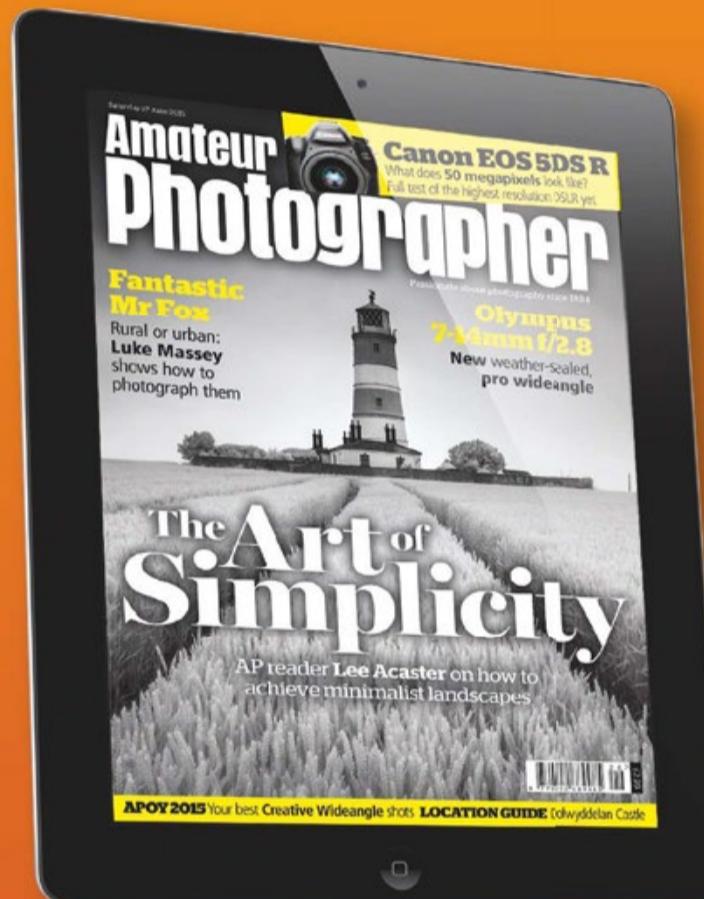
If you don't own a camera with built-in Wi-Fi, but are looking for a way of transferring your images instantly, this is currently one of the most advanced Wi-Fi cards available on the market and is certainly worth a closer look. **Michael Topham**

The Mobi Pro 32GB is Eyefi's most advanced SD card to date



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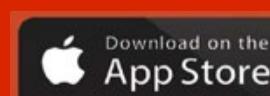


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At a glance

- 24.2MP, full-frame CMOS sensor
- ISO 100-50,000
- Leica Summilux-M 28mm f/1.7 Asph lens
- 10fps continuous shooting
- 3.68-million-dot EVF
- 3in, 1.04-million-dot touchscreen
- Price £2,900

Leica Q (Typ 116)

Everyone is raving about it, but just what makes the **Leica Q** so good? **Richard Sibley** puts this premium compact camera to the test

For and against

+	Premium build and construction
+	Superb electronic viewfinder
+	Fast AF especially with touchscreen
+	Excellent black & white mode
-	High price
-	No external microphone socket for video

Where in the range



Leica M (Typ 240)

Price £5,250

Leica's flagship camera features interchangeable lenses and a 24-million-pixel full-frame sensor



Leica X (Typ 113)

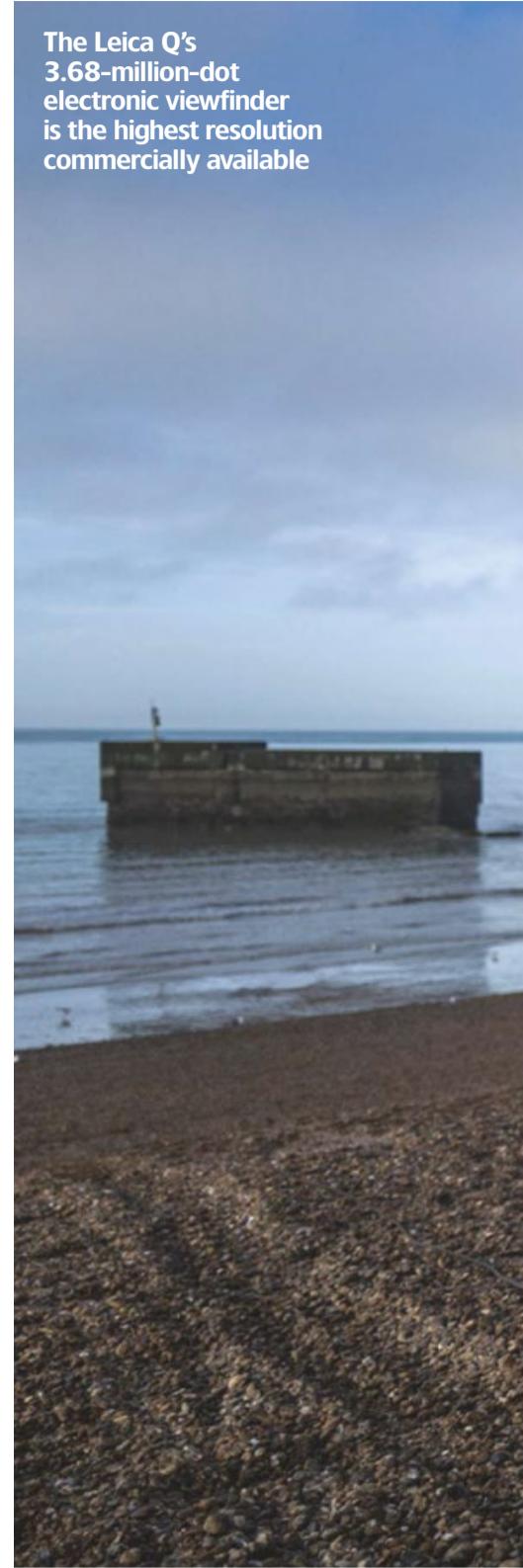
Price £1,550

This premium compact camera has a fixed 35mm equivalent f/1.7 lens that partners a 16.2-million-pixel APS-C sensor

Data file

Sensor	24.2-million-pixel, full-frame CMOS sensor
Output size	6,000x4,000
Focal length mag	1x
Lens mount	28mm f/1.7
Shutter speeds	30secs-1/16,000sec
ISO	100-50,000
Exposure modes	PASM + 11 scene modes
Metering	Evaluative, centre, spot
Exposure comp	±3EV in 1/3 stops
Drive	Up to 10fps
Movie	Full 1080p at 60 or 30fps
LCD	3in, 1.04-million-dot touchscreen
Viewfinder	3.68-million-dot EVF
Focusing	Contrast detection
External mic	No
Memory card	SD, SDHC, SDXC
Power	BP-DC12 Li-Ion battery
Dimensions	130x80x93mm
Weight	640g (inc batteries)

The Leica Q's 3.68-million-dot electronic viewfinder is the highest resolution commercially available



Ever since digital photography went mainstream, Leica has been stuck between a rock and a hard place. Traditionalists want Leica to stick as close to its heritage as possible, while others see the company as something of a relic, making expensive cameras that offer little in the way of innovation. As you'd expect, the reality is somewhere between the two.

Leica's M-mount rangefinder cameras are beautifully manufactured, but they come at a premium price and offer little in terms of image quality that you can't find elsewhere for less money. The company's compact cameras are re-badged Panasonic models, with a red-dot logo and the Leica levy added to the price.



As for its own fixed-lens compact cameras, like the X series, Leica has never managed to capture the essence of what it is to use a Leica rangefinder camera – until now.

The Leica Q is a game changer. The company's X-series cameras, with their 16.2-million-pixel, APS-C-sized sensors and lack of viewfinder, failed to capture the imagination and don't offer the same experience as the Leica M rangefinder. Plus, they have to fight fierce competition from the likes of the Fujifilm FinePix X100 series. However, the Leica Q is a different beast. For this new line, Leica seems focused on the experience of using the camera. If that experience means breaking with some users' preconceived ideas of what Leica cameras are about, then so be it.

Features

So just what has Leica done to make the Q work so well? Let's start with the sensor. The Q features a 24.2-million-pixel, full-frame CMOS sensor. To date, the only compact cameras to rival this are the Sony Cyber-shot DSC-RX1 and RX1R. This means that the Leica Q stands out in the already crowded premium compact-camera market.

Next is something that's not typical of Leica – a 3in, 1.04-million-dot touchscreen. The Leica T (Typ 701) compact system camera also uses a touchscreen, but targets a younger set of photographers. Nowadays, touchscreens are almost standard, so it's perhaps not such a surprise to see one on a classically-styled Leica.

However, the final key feature is a surprise: a built-in 3.68-million-dot electronic viewfinder.

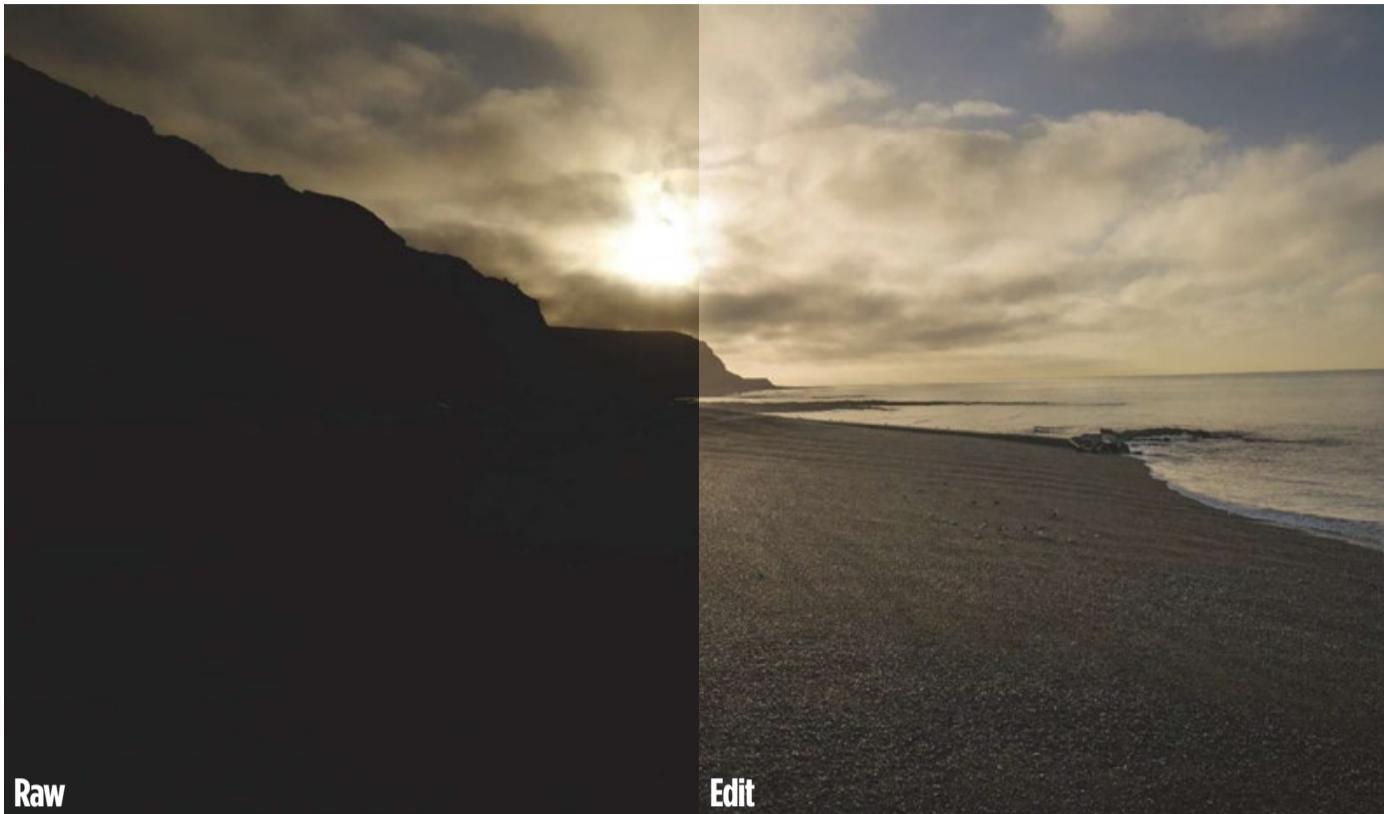
With a resolution this high, the electronic viewfinder in the Leica Q is the highest in any commercially available camera. There are 5-million-dot EVFs in development, but currently Leica can claim a first. It's a real feather in its cap for the German company to beat major electronics companies like Sony and Panasonic to this.

Leica rangefinders obviously use an optical rangefinder mechanism, and in the past Leica's X-series models have had optional optical or electronic viewfinders. Incorporating an electronic viewfinder in the Leica Q is sure to raise eyebrows, with many people asking if the EVF is a sign of Leica

forsaking its roots. With a touchscreen as well, the Leica Q doesn't seem much like the Leica cameras we know at all.

Regarding the more conventional features of the new camera, the Leica Q has a sensitivity of ISO 100-50,000. Shutter speeds range from 30secs-1/2,000sec and are available via the mechanical shutter. In another concession to modernity, the Q also has an electronic shutter. This automatically kicks in at 1/2,500sec and allows shutter speeds of up to 1/16,000sec.

Fixed to the front of the Q is a Leica Summilux-M 28mm f/1.7 Asph lens. The aperture is controlled via an aperture ring on the front of the lens, and a manual focus ring sits just



Raw

At low sensitivities, a lot of detail can be recovered from the shadow details of raw images, without introducing noise

behind this. There's also a ring that switches between the lens's standard and macro mode. This clever piece of engineering shifts the optics forward, and even reveals a new focus-distance scale. The result is that the shortest focus distance switches from 30cm to 17cm.

The 28mm lens is also optically stabilised. Looking into it, you can see the stabilisation element moving to counteract any camera shake – an impressive and intriguing thing to view.

A feature on the Q that was previously found on the Leica T is built-in Wi-Fi. This is used with a dedicated Leica Q app that's available for both Android and iOS via their respective app stores.

Elsewhere there is quite a comprehensive, if somewhat standard, array of features. The camera has the usual set of exposure and metering modes, as well as a set of scene modes. The Q can shoot continuously for up to 10fps, as well as capturing video at a full HD 1920x1080 60p or 30p resolution.

Build and handling

If you've ever used a Leica rangefinder camera, you'll pick up the Leica Q and feel something instantly familiar. Its aluminium top-plate and magnesium-alloy body give the camera a reassuring weight. The chunky body and rounded size mimic the look and feel of a Leica M-series camera.

As with all Leica cameras, the Q is quite understated. It has a

simple matt-black finish on the body, with a textured front to aid the grip. The famous red-dot logo adorns the right of the camera's body, while the top-plate is flat and the sunken hotshoe is flush

with the body. A cutaway to the left of the camera is home to a shutter button and shutter-speed dial. A control dial and video-record button sit within this cutaway half towards the top

of the camera.

The rear of the camera also has a simple layout. Five small buttons sit to the left of the screen, with a small directional control on the right. The emphasis of the Leica Q has obviously been on simplicity and design, but it is important that any design is functional – after all, a camera is a tool to use rather than look at.

I can often judge what I really think of a camera by whether I forget that I'm reviewing it and just enjoy using it – and this definitely happened with the Leica Q. With the sensitivity set, the metering on evaluative, the autofocus turned on and the camera in aperture-priority mode, I just started shooting. After a few hours, I noticed something interesting: I'd gradually turned off most of the automatic features and was focusing and exposing all my shots manually. This is something that I tend not to do. I'll do it as part of the testing process, to see what the camera is like in these modes, but with the Leica Q it was different – it was instinctive.

The explanation for this sudden

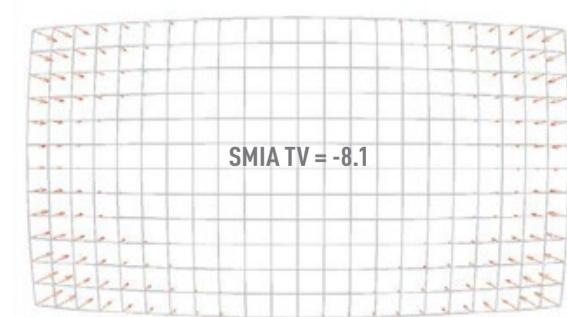
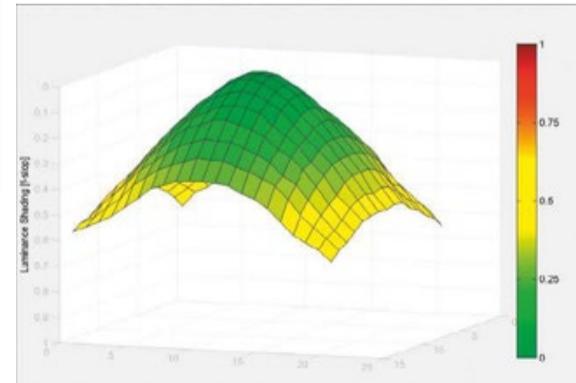
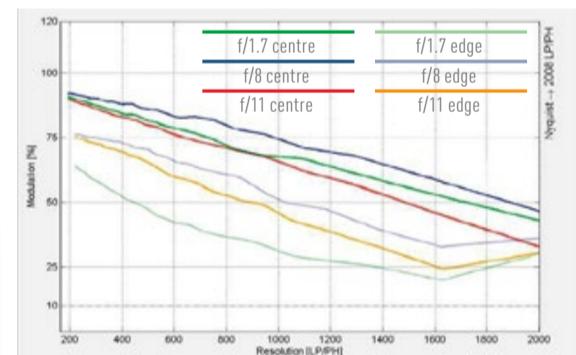
Leica Summilux-M 28mm f/1.7 Asph lens



WHEN a lens is fixed, it's important that it's a good match for the camera, and although some may question the decision to opt for 28mm rather than 35mm, I found that I was able to achieve a variety of images without feeling too compromised.

The lens is constructed of 11 elements in nine groups, with three of the elements being aspherical. As you would expect from Leica, the lens feels good in the hand, with a reassuring level of torque on both the aperture and manual-focus rings.

The 28mm f/1.7 lens is extremely sharp, especially when shooting between f/5.6 and f/8. Sharpness starts to drop at f/11, with diffraction becoming obvious at the smallest aperture of f/16. There is barrel distortion, but this is corrected, even in raw files. The lens is similar to other modern lenses we've seen where design is balanced with what can be easily corrected, to create a lens of fantastic quality and images that match.





The in-camera monochrome mode produces some fantastic images

switch to manual is all to do with the handling. It just feels right to operate the Leica Q in this way, and that's down to the sum of its parts. You expect the camera body to be straightforward and refined, but it's the features you wouldn't expect from Leica that make the Q shine.

This may seem like blasphemy to some, but it's the EVF that sets the Leica Q apart. With such a high resolution, the EVF is the closest thing to using an optical viewfinder I've encountered. When manually focusing the lens, the slightest turn of the focus ring presents a magnified view in the electronic viewfinder window, or on the rear LCD screen. As the resolution of the EVF is so high, you can see when the tiniest details are in focus.

What's more, the standard Leica focusing lever on the underside of the lens makes manual focusing easy. This combination makes the Leica Q one of the best cameras to manually focus that I have used in a long time.

While the key exposure features

are accessed on the body of the camera, you need to go into the menu system of the Leica Q to change some of the more advanced settings. The layout of the menu is straightforward, with all the menu settings placed in a long list. It may not be the most advanced set of menu settings, but in keeping with the principles of Leica design, it contains enough features to tweak how the camera operates without being excessive.

Comparisons are often made between Leica and electronics giant Apple. This is somewhat fitting, as the best way to describe the way the Leica Q handles is that 'it just works' – a phrase often said at the launch of Apple products.

Autofocus

While it's fair to say that Leica cameras aren't especially known for their fast autofocus speeds, the Leica Q comes as something of a surprise. The camera uses contrast-detection autofocus. Just a few years ago, this was vastly inferior to the much faster phase-detection type of

Focal points

The Leica Q inherits much of its design from the classic styling of the Leica M

Silent operation

Everything about the Leica is quiet, making it perfect to use when you don't want to draw attention to yourself.

USB 2.0 and HDMI

The side of the camera houses a USB 2.0 socket for image transfer, while the HDMI socket allows connection to a TV.

Shutter button

The shutter button has a nice response, but some may bemoan the lack of a shutter-release screw thread.

Aperture ring

This selects the aperture, but switching to the 'A' setting puts the aperture into automatic mode.

Focus ring

Focusing the lens feels responsive, with a good torque on the focusing ring. Using the small button on the focus lever, the lens can be put in its AF mode.



Hotshoe

The Leica Q is compatible with the Leica SF 26 flashgun.

Video-capture button

Video can be started or stopped by using the red button on the camera's top-plate. Audio is recorded in stereo.





The macro mode allows for close focusing with smooth-looking bokeh

autofocus, but things have changed and now contrast detection can rival phase detection in most circumstances. This is exactly the case with the Leica Q. It focuses extremely quickly, snapping into focus in any of its multi-area, centre or selective single-point modes. Given the fixed 28mm focal-length lens, which means the Leica Q will largely be used for landscape and reportage-style images, the AF speed is more than fast enough.

However, the AF speed tells just part of the story. Once again, it's a feature you wouldn't associate with Leica that makes the AF stand out – the touchscreen. Most photographers aren't especially enamoured by touchscreen technology as a means of operating their cameras, but the one area where touchscreens come to the fore is when selecting the autofocus area.

With the touchscreen turned on and the AF mode activated, a simple touch of the Leica Q's screen selects the points of focus and the lens quickly snaps to that area. It makes changing the AF points almost effortless. Once again, this reflects on the way that the camera handles and operates. Each feature and function seems to work harmoniously together, making simple tasks just that – beautifully simple.

Performance

You can probably already tell that I really enjoyed my time using the Leica Q, and that is all down to the way the camera performed. As I said previously, it isn't so much that there are one or two standout features of the camera, but rather what makes it a real pleasure to use is the way that the camera operates as a sum of all its parts.

We've established that the

autofocus and handling of the camera, as well as the EVF and rear screen, are excellent, but what about the features that affect the image quality of the camera?

The evaluative metering performs well, although I did find that it had a slight tendency towards retaining highlight detail. This produced some images that many photographers would think slightly underexposed. Obviously, this is easily rectified, as plenty of detail can be recovered from the shadow areas without introducing much in the way of luminance or colour noise. Spot and centreweighted metering modes are also available and these perform exactly as you would expect them to.

There are a variety of different colour modes available in the camera, although the one that really caught my eye was the monochrome setting. With this setting customised to increase the contrast, I found that the black & white images looked as though they had been taken with a red filter, with blue skies looking particularly dark and moody. Black & white images taken in this mode looked fantastic.

Images can be saved as either JPEG or DNG raw files. Generally, the JPEG images produced in-camera look good, although they do benefit from a slight increase in sharpening. While the DNG raw files can be opened in virtually all raw image-editing software, a full copy of the latest version of Adobe Photoshop and Lightroom are included with the camera. When editing the raw files, I found there was a lot of recoverable detail in both highlight and shadow areas, and that the files responded well to some fairly harsh lifting of the shadow.

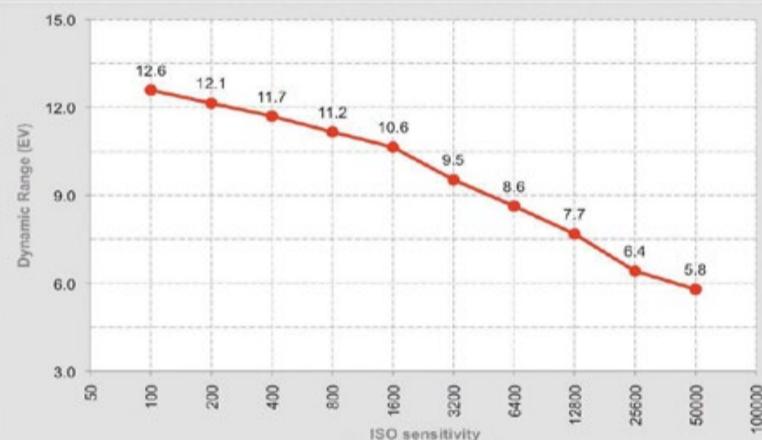
Lab results

Andrew Sydenham's lab tests reveal just how the camera performs

The Leica Q uses a 24.2-million-pixel full frame sensor, which is most likely a Sony model. Leica has already stated that it's not the same sensor as that used in the Leica M (which has a bespoke sensor). As can be seen in the tests on this page, the Leica Q performs just as you would expect it to. It handles noise well until fairly high sensitivities, and the dynamic range is good, without setting any records. As for the resolution, the camera again performs about on par for a sensor of this specification.

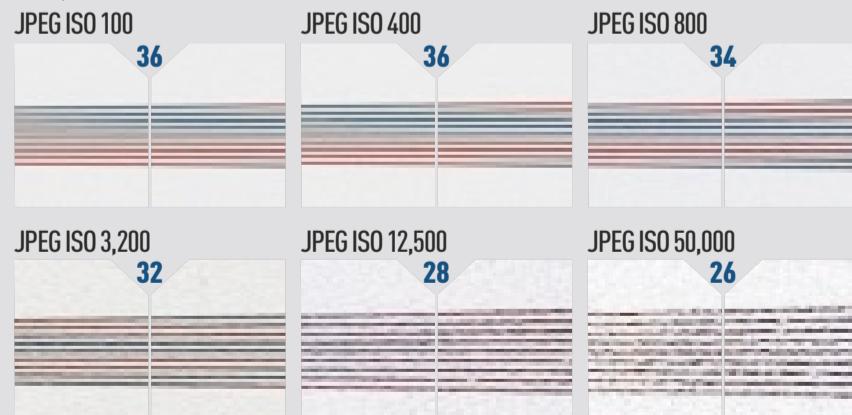
Overall, the Leica Q produces good images throughout ISO 100–6,400, which is the working range most photographers will operate in regularly. However, as discussed elsewhere in this test, while the sensor may be seemingly standard, the Leica Q's real strength lies in its handling, EVF and autofocus.

Dynamic range



In our Applied Imaging tests, the Leica Q reaches a respectable dynamic range of 12.6EV at ISO 100. Numbers aside, I found that even up to ISO 400 there was plenty of detail that was recoverable in the shadow areas of raw images. As the graph shows, the Leica Q has a fairly linear dynamic range pattern and falls steadily as the sensitivity increases. By the top two sensitivity settings of ISO 25,600 and 50,000, the dynamic range is 6.4 and 5.8EV with far less detail in highlight and shadows.

Resolution



The Leica Q resolves around 3,600l/ph at ISO 100 in our resolution tests. This level of detail is about what you would expect from a camera with a 24-million-pixel sensor. As can be seen in the resolution chart swatches above, there is some coloured moiré patterning visible that softens detail, but generally the result is good. As the sensitivity rises, the resolution holds up well, still reaching 3,200l/ph at ISO 3,200. Although noise is visible, even ISO 50,000 reaches a respectable 2,600l/ph.

Our cameras and lenses are tested using the industry-standard Image Engineering IQ-Analyser software. Visit www.image-engineering.de for more details

Noise

Both raw and JPEG images taken from our diorama scene are captured at the full range of ISO settings. The camera is placed in its default setting for JPEG images. Raw images are sharpened and noise reduction applied, to strike the best balance between resolution and noise.

JPEG ISO 100



JPEG ISO 800



JPEG ISO 12,500



JPEG ISO 400



JPEG ISO 3,200



JPEG ISO 50,000



As with the dynamic range and resolution chart tests, the noise produced by the Leica Q is about what you would expect from a camera with a 24.2-million-pixel full-frame sensor. Images at low sensitivities are virtually noise free, and at ISO 800 even the shadow areas of images show virtually no noise. It's not until around ISO 6,400 that noise starts to become obtrusive, and as usual, the highest two sensitivity settings do suffer from luminance noise and should generally be used only as a last resort. However, throughout the sensitivity range, the colour noise in JPEG images is very well controlled. This is great news for JPEG shooters who can comfortably shoot right up to ISO 6,400. Those shooting DNG raw images obviously have a little more flexibility, but we'd recommend using sensitivities below ISO 6,400 to get the best out of the Leica Q.

The competition



Fujifilm X100T

Sensor 16.3MP X-Trans APS-C-sized CMOS

ISO 200-6,400 (100-51,200 extended)

Price £850

The Fujifilm X100T features a 23mm f/2 lens, the equivalent of a 35mm lens on a full-frame sensor, and has fantastic hybrid and optical viewfinder that offers the best of both worlds. The X-Trans sensor produces great detail and colour.

Ricoh GR II

Sensor 16.2MP APS-C-sized CMOS

ISO 100-25,600

Price £600

Recently announced, the Ricoh GR II, with its 28mm lens, improves upon its predecessor with better image quality and added NFC and Wi-Fi connectivity. We thought the original version was a fantastic and affordable camera. Look out for our test in a forthcoming issue.

Sony Cyber-shot DSC-RX1

Sensor 24.3MP full-frame CMOS

ISO 100-102,400

Price £2,100

The RX1 is the only other full-frame compact camera, although it's smaller than the Leica Q and has a Zeiss 35mm f/2 lens. It's also available as the RX1 R without an anti-aliasing filter. Both cameras take impressive images but don't have built-in EVFs.

ALL PRICES ARE APPROXIMATE STREET PRICES

Our verdict

APART from the Leica M rangefinders, most of Leica's other digital cameras haven't quite hit the mark. They have been good models, but perhaps failed to capture the imagination of photographers who aren't Leica enthusiasts. However, the Leica Q is different. It feels complete, as if Leica has listened to the feedback from its users and thought about how it could make a digital camera that's in keeping with its traditions, but also suits the needs of contemporary photographers.

It's worth remembering that Leica's history has seen it create products that can make complex tasks simple – and that is exactly what the company has done here. The EVF, touchscreen and autofocus may all seem to be at odds with how we perceive Leica, but it's these features that make the camera a pleasure to use.

As you would expect, the Leica Q doesn't come cheap

at £2,900. However, if you compare it to the Sony Cyber-shot DSC-RX1, currently around £2,100 and which comes without a built-in EVF (an optional EVF costs £379 extra), the total starts to creep towards a similar price.

While the Leica Q is far from cheap, the actual market value of the camera is pretty fair. Given how the camera performs, I'm sure it will sell well – and to people who will actually want to use it, not simply look at it on a shelf or hang it round their necks like designer jewellery.

Leica has already said that there may be other versions of the camera in the future, presumably with 35mm or 50mm fixed lenses, but personally I would suggest that the company goes the whole hog and brings out an M-mount version. When the viewfinder and focusing are this good, the rangefinder is looking more and more obsolete.



FEATURES	8/10
BUILD & HANDLING	9/10
METERING	8/10
AUTOFOCUS	8/10
AWB & COLOUR	8/10
DYNAMIC RANGE	8/10
IMAGE QUALITY	9/10
VIEWFINDER/LCD	9/10



At a glance

- 250W max energy
- 9-stop energy range
- LED modelling light (9W)
- Battery capacity up to 215 full-power flashes per charge
- Head weight 0.7kg
- Generator weight 1.6kg (inc battery)
- Price £1,700 (single head To-Go kit)

Profoto B2 off-camera flash system

Martin Evening tries a new studio-type lighting system for location photography

Studio battery-powered flash systems provide you with powerful and controllable lighting that can be taken anywhere on location. Such systems have been around for a few years and most offer a lot more flash power than on-camera speedlights, while typically being compatible with a wide range of light-shaping accessories such as soft boxes or snoots.

Profoto products are at the elite end of the market and while they are certainly more expensive than most other portable flash systems, they have a good reputation for being innovative and well designed.



My daughter shot outdoors against a black backdrop in HSS mode, 1.4sec at f/5.6, ISO 200. I used sunlight as a backlight and had full control over the amount of daylight balanced with the flash soft box light positioned above the camera and slightly to the right

The key thing about the Profoto B2 off-camera flash is that it is lightweight. The flash kit can work with Profoto Air Remote TTL devices and also offers High-Speed Sync functionality (more of which later). Up until a few years ago battery-powered systems would have slow recycle times and you were limited in the number of flashes you could expect to get from a single battery charge.

The flash recycle time on the Profoto B2 at full power is fast enough to be suitable for all types of photography, not just outdoor location work. I can therefore see this being ideal for many types of location photographers, especially as it saves on having to lug around heavy, bulky studio lighting gear. All a far cry from the old days where one would either have to make do with slow-recycling outdoor flash heads or hire a generator to power conventional studio flash packs.

The location kit options

The B2 off-camera flash system is a lighter, more portable counterpart to the Profoto B1. The standard B2 250 AirTTL To-Go Kit consists of a B2 generator pack, Li-Ion battery plus charger, a B2 head with LED modelling light, and a carry bag. Meanwhile the B2 250 AirTTL Location Kit contains an additional B2 head plus an extra Li-Ion battery. The generator pack weighs just 1.6kg and comes with a soft cover to protect it from accidental knocks and keep it free from damp or

dust when working outdoors. It also comes with an adjustable shoulder strap, making it easier to carry and stay mobile while shooting.

The B2 heads are nice and light, weighing just 0.7kg each. It is also possible to mount the head on a bracket attached to the camera, which would suit photographers looking for something better (and more powerful) than a regular speedlight. When the B2 heads are mounted on studio stands they are less top heavy compared to the Profoto B1 monolight system. A monolight with an umbrella or softbox mounted on a flimsy location stand outdoors can easily be blown over, and while this can still happen to the B2 heads, there is less risk of serious damage because they are so light.

The Profoto B2 generator pack has a power output of up to 250W, which is adjustable over a 9 f-stop and adjustable in 1/10 stop increments. The pack takes 0.03sec to recharge at minimum power and 1.35secs at maximum, allowing you to shoot up to 20 flashes per second. It has two fully asymmetrical outlets, so if using the Location Kit with two B2 heads, both are independently adjustable. The B2 generator pack uses an exchangeable high

capacity Li-Ion battery which lets you shoot up to 215 flashes at full power, or have the modelling light switched on for 90 minutes from a single charge.

TTL wireless shooting

The built-in AirTTL fully supports wireless operation with all existing Profoto Air transceivers, up to a distance of 300m. The standard Profoto transceiver is compatible with any camera that has a hotshoe mount and provides individual control of up to three heads. There are also Air Remote TTL units for Nikon and Canon cameras.

These work directly with the camera's internal TTL system to control automatically the exact amount of flash that is discharged, rather than having to set the flash output manually. All you have to do is to decide how much you wish to balance the flash output. This can be left set to zero or you can use the buttons to adjust the power relative to the correct flash exposure. This makes setting up and shooting really simple. For example, if you are working with two lights and want to balance them so that light B provides half a stop less light relative to light A, you just click to set light B to -0.5 stops and start shooting.

High-Speed Sync

High-Speed Sync functionality (HSS) gives you full control over the available light. In effect, this means that when using the Air Remote TTL for a Canon or Nikon camera you can shoot at any shutter speed you like. On the face of it 250W doesn't seem like enough power output to compete with the sunlight on a bright, sunny day. Normally, the flash synchronisation with a focal plane shutter is limited to 1/250sec. With a leaf shutter lens you may be able to sync at up to 1/1,600sec, but you would need something like a PhaseOne camera system to do so!

Therefore, on a sunny day if you want to shoot flash outdoors with a regular digital SLR and knock back the ambient daylight by around one stop, at ISO 100 you will need to shoot using an exposure of f/16 at 1/250sec. This in turn implies you need a really powerful flash source to obtain a bright enough flash exposure on your subject when shooting at such a small aperture. At the same time, if you are forced to shoot using a small aperture, this means a greater depth of field and makes shallow focus photography impossible.

HSS is a real game changer



This TTL-C unit is for Canon cameras, while the TTL-N is for Nikon

because it allows you to shoot at any focal plane shutter speed you like. When testing this kit I was able to synchronise the flash with my Canon camera using the Canon Air Remote TTL at a shutter speed of 1/8,000sec. So even though the output of the flash pack was just 250W, I shot outdoors in bright daylight at wide aperture and had full control over the ambient daylight and flash exposure.

There are some compromises when shooting in HSS mode, it does limit the unit to shooting at the higher power ranges (which will use up more battery power) and there is some loss of light output. There are reports that the results when shooting at the higher shutter speeds can be uneven in colour or power consistency. However, I can't say I noticed any such problems.

AP

Our verdict

THE Profoto B2 off-camera flash system is certainly more expensive than other battery flash systems, but adding an Air Remote TTL device makes the system extremely versatile, offering novel features such as HSS and TTL mode shooting (if purchasing a separate Air Remote TTL device).

If you are working in HSS mode and the 250W output isn't powerful enough for a particular shot, you can easily increase the effective flash power output by doubling both the ISO setting and the shutter speed. Most recent Canon and Nikon cameras perform really well at higher ISOs, so this shouldn't be a problem.

I appreciated being able to fine-tune the daylight balance and being able to shoot using almost any aperture or shutter speed I wanted. I could set the flash exposure for the foreground and use the shutter speed to balance the sunlight clipping the subject in ways that were simply not possible before. I can see these lights being useful for travel and location photography – in fact for most assignments that require you to shoot outdoors with studio-type lighting.

Amateur
Photographer
Testbench
GOLD
★★★★★

Photograph of actress Georgia Kirkland, shot using the Profoto B2 Location Kit. For this shot I used one head to light the background and the other to light the model



With its 24mm equivalent view, the 16mm is great for scenic shots



Fujifilm Fujinon XF16mm f/1.4 R WR

Andy Westlake tries out this weather-sealed fast prime lens for X-system users

Since the launch of Micro Four Thirds by Olympus and Panasonic in 2008, every other major camera manufacturer has come up with its own mirrorless camera system. With this proliferation of new mounts for compact system cameras, though, comes a need for new lens ranges to match.

Different companies have naturally had different approaches and emphases on building up their own systems, but Fujifilm has been arguably the most focused. It has made the decision to concentrate unashamedly on the higher end of the market, catering specifically to enthusiast and professional photographers who are most likely to build up an extensive lens system. It has also made the decision to work purely with the APS-C sensor format and choose focal lengths optimised for it, rather than simply reusing ones familiar from the days of 35mm film. The result has been an impressive range of high-quality zooms and

primes, with the 16mm f/1.4 the latest addition to the X-system arsenal.

With an angle of view equivalent to that of a 24mm lens on full-frame, this lens offers a wideangle perspective that should interest landscape and architectural photographers. The impressively fast maximum aperture is appealing for hand-held low-light work, allowing the use of lower ISOs than would otherwise be possible. It also gives potential for selective focus effects, giving a depth of field roughly equivalent to that of an f/2 lens on full-frame. This combination of wide angle and fast aperture is currently unique for a CSC lens.

Features

The XF16mm f/1.4 R WR employs an optical formula of 13 elements in 11 groups, including two aspherical elements and two extra-low dispersion (ED) glass elements, which together



are designed to minimise distortion and chromatic aberration. Fujifilm's Nano GI coating is applied to the inside surface of the front element to combat flare and ghosting, along with HT-EBC (high transmittance electron beam coating) on other glass surfaces.

The 'R' in the lens name denotes that, like most of the Fujinon lens range, it includes an aperture ring. This has markings from f/1.4 to f/16 in full stop increments, and

Distortion is kept to a minimum by purely optical means



click stops at intermediate one-third stop steps. An 'A' position passes aperture control to the camera's automated systems in 'program' or 'shutter priority' mode.

The large focus ring behaves in the same way as those on Fujifilm's existing 14mm f/2.8 and 23mm f/1.4 primes. In its forward position the lens is in autofocus mode and the focus ring is locked from moving. Pull the ring back towards the camera and it engages manual focus, exposing a distance scale in the process.

There's also a depth of field scale on the barrel, but its markings are so closely spaced compared to the sparsely labelled distance scale, that it's of little practical use. The minimum focus distance is a mere 15cm, and a floating focus system is employed to maintain good image quality through the full focal range.

For the first time on a Fujifilm prime lens the 'WR' suffix is used, denoting weather resistance. The lens has nine seals to protect against dust and water, including one around the bayonet mount. The lens is also freeze-proof and usable at temperatures as low as -10°C at least.

Filters can be attached using 67mm thread; this does not rotate on focusing, making it easy to use with polarisers and neutral density gradient filters that are popular for landscape photography. A bayonet-fit, plastic petal-type lens hood comes as standard and can be stored in the reverse position when not in use. An optional cylindrical metal hood with a rectangular baffled cut-out, the LH-X16, is due to appear in September 2015.

Build and handling

With its predominantly metal-barrelled construction, the 16mm feels like a top quality piece of kit. In terms of design it's very similar to Fujifilm's other fast primes, in particular the 23mm f/1.4, although when it comes to size and weight it's closer to the 56mm f/1.2. Most of the barrel is taken up by the broad focus ring and the slimmer aperture ring, which are separated by a prominent fixed section that provides a positive grip when changing lenses.

The manual focus ring is one of the better examples of its type, driving manual focus electronically while giving a reasonably good impression of a traditional mechanical design. It rotates smoothly between its infinity and minimum focus end stops, engaging your chosen focus aid in the process. I'm less pleased with the aperture ring, which has extremely loose click stops making it easy to move inadvertently. This isn't quite as problematic as it might sound, as you can

always see the current aperture setting in the viewfinder, but I'd prefer more positive click stops nonetheless.

For X-Pro1 users it's worth noting that the 16mm will protrude a huge amount into the lower right area of the optical viewfinder, especially with a hood attached. As with the 14mm f/2.8 and the 10-24mm f/4 zoom, it's best to use the electronic viewfinder so you can see the entire scene.

Autofocus

With a coreless DC motor driving autofocus, the 16mm isn't quite the fastest-focusing lens in Fujifilm's range, but for the kinds of subjects it's most likely to be used for it's more than capable. Likewise, while the linear motors used in the company's top-end zoom lenses are practically inaudible, the 16mm's AF is merely very quiet indeed. However, only the photographer is likely to be able to hear it and when paired with the silent electronic shutter on the X-T1 and X-T10, it should be possible to shoot in quiet environments with impunity.

In terms of accuracy, as we've come to expect from mirrorless systems that determine correct focus using the main imaging sensor, there's absolutely nothing to complain about. The only caveat is that it's necessary to ensure that the AF area is aligned exactly with your desired point of focus. When shooting wide open, I also found it pays to select the smallest AF area the camera will use, for the best possible precision.

One useful trick worth knowing is that if the lens's focus ring is pulled forwards but the



With its fast maximum aperture, the 16mm is ideal for shooting indoors and in low light



The wideangle view can be used to produce some dramatic perspectives

camera's focus mode switch is set to manual, autofocus can then be acquired using the AFL button. This can be helpful when you wish to prefocus on your subject and minimise any possible shutter lag.

Image quality

Fujifilm's XF lens range has gained a strong reputation for image quality, and the XF 16mm f/1.4 R WR continues in the same vein. Indeed the lens is a spectacularly good performer, giving impressively sharp images. The extreme edges and corners of the frame are just a little soft at large apertures, but this is likely only to be visible in relatively large prints (12x16in or A3+), and even then shouldn't detract from a strong subject. Stop down to normal working apertures of f/5.6–f/8, and the lens is critically sharp across the entire frame.

Vignetting is low, and compensated by Fujifilm in JPEG processing. Distortion is practically invisible, and unlike many other CSC lenses, this is achieved by purely optical correction, rather than software correction. Colour fringing in the corners of the frame due to lateral chromatic aberration is extremely low, but some blue or purple fringing can be seen around extremely high-contrast edges (for example, window frames when shooting interiors) while working at large apertures.

If the lens has any kind of weak point, it's flare when shooting with the sun in, or just outside, the frame. At large apertures veiling flare can reduce contrast nearby, and at small apertures strong multi-coloured patterns can start to appear across much of the frame. Any such problems can usually be seen in the viewfinder before shooting, but there's little you can do about them.

When working at large apertures, the lens generally renders defocused backgrounds quite smoothly and attractively. This may not be something that's important for every shot with a wideangle lens, but for certain types of photography such as environmental portraiture, it's a very welcome trait.



Our verdict

FUJIFILM'S X-system cameras have been gaining a lot of plaudits over the past couple of years for their combination of excellent image quality and photographer-friendly handling. However, there's little point in having stellar cameras without a lens line to support them. Fujifilm seems to understand this better than most other manufacturers, with the result that its Fujinon lens range is arguably the most impressive of all those currently available for compact system cameras. The XF16mm f/1.4 R WR only serves to reinforce this.

Indeed, this is one of those rare lenses with which it's really quite difficult to find fault. Optically it's excellent, autofocus is fast, quiet and accurate, and build quality is superb, with weatherproofing a very welcome addition. It's not a particularly small lens, but still a perfectly reasonable size given its specification. With nothing else quite like it on the market, it's yet another compelling reason for serious photographers to consider the X-system.



Data file

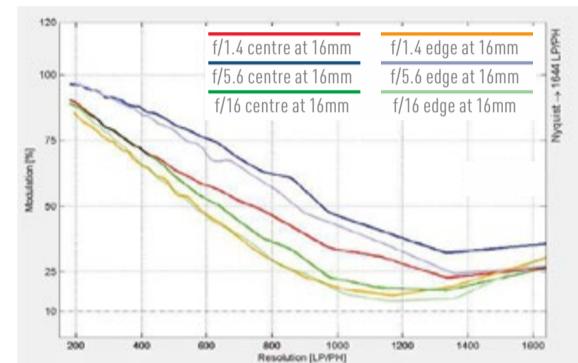
Price	£729
Filter Diameter	67mm
Lens Elements	13
Groups	11
Diaphragm blades	9
Aperture	f/1.4–16
Minimum focus	15cm
Length	73mm
Diameter	73.4mm
Weight	375g
Lens Mount	Fujifilm X

**Amateur
Photographer**
Testbench
GOLD
★★★★★

Fujifilm Fujinon XF16mm f/1.4 R WR

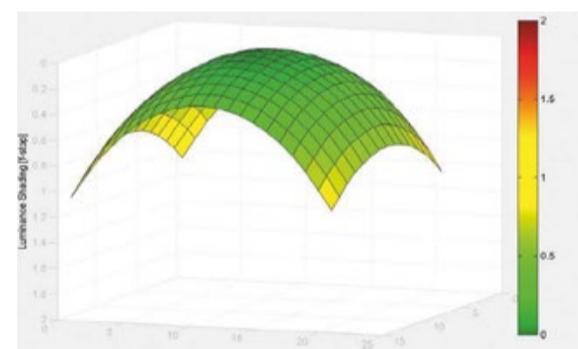
Resolution

Sharpness is very good in the centre of the image wide open, and the corners aren't too far behind. Stop down to just f/2.8 and the corners now match the centre. Our MTF measurements then barely change before diffraction sets in at f/11, suggesting there's plenty in reserve for higher-resolution sensors. The camera used was the 16MP X-A1, as its Bayer sensor is more tractable for lens testing.



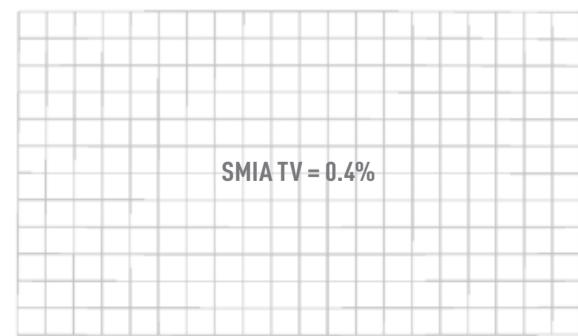
Shading

Vignetting is kept impressively low. In our Applied Imaging tests we see just over a stop of shading in the corners of the frame at f/1.4, which really isn't much for a fast prime. Fujifilm also corrects vignetting in software, so even this won't be visible in camera JPEGs. Stopping down to just f/2.8 eliminates shading almost completely.



Curvilinear distortion

While most CSC lenses are designed to employ a degree of software distortion correction, Fujifilm adopts a different approach. Like the 14mm f/2.8, the 16mm is highly optically corrected and displays very little distortion, even when its files are examined using a raw converter like Capture One for which all software correction can be disabled.



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KATE HOPEWELL-SMITH



Kate Hopewell-Smith has a fine art background and studied the history of art at degree level. Following graduation she worked in creative industries - TV marketing, fine art publishing and brand

consultancy. Following a move out of central London to raise her children, she began to study photography as a hobby with the intent of being able to successfully capture her children as they grew. The hobby quickly grew into a successful business and she has never been in any doubt about her photographic passion - and that is photographing people. She believes you can only do this successfully if you enjoy making connections and building relationships.

Over the last 5 years she has chosen to specialise in Portraits, Weddings and Boudoir and is also now offering filming on DSLR. Kate plays an active role in the photography industry and has a reputation as a strong and generous trainer, she also writes for a variety of photography magazines. She is also a panel member for the Guild of Photographers and for the second year running represents the Nikon brand as one of their UK Ambassadors.

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Video lens dilemma

Q I've started experimenting with recording video using my Nikon DSLR and am rather pleased by the results. But I want to get a bit more creative, and I'm frustrated that the 18-55mm lens I got with the camera isn't very easy to focus manually and I don't seem to be able to adjust the aperture while recording either. I've heard that manual focus lenses might be the solution and one of my work colleagues has suggested specialist video lenses are best, although these seem to be really expensive. I'm getting confused with all this information – can you help?

John Kinsella

A You're running up against one of the limitations of DSLRs – while they can record video at high quality, the lens mounts and many lenses weren't really designed for the job. In Nikon's case only the most expensive cameras can adjust aperture while recording.

One way around this is to use old manual focus lenses. Fortunately there are a number of F mount manual primes that

have much better focus action than your kit zoom, and which also allow manual aperture adjustment. However they still usually have click-stopped aperture rings, which can result in obviously-stepped exposure transitions and noises on your soundtrack.

Specialist video lenses use aperture rings that don't have click-stops, allowing smooth, silent adjustment. They are also normally marked in T-stops –

these describe the light transmitted by the lens, so that two lenses set to the same T-stop should give footage of the same brightness.

Video lenses often have longer manual focus throw, which allows for smooth pulling of focus from one subject to another. Distance and T-stop scales are usually marked to be viewed from the side of the camera, and focus and aperture rings are ridged to be used with a video rig. But while most video lenses are very expensive, some are

quite affordable, most notably those from the Korean lens maker Samyang. Indeed Samyang usually makes photo and video versions of all of its manual focus lenses, with relatively little cost difference between them.

Andy Westlake



Focus points

Q Why do manufacturers feel the need for so many focus points, as surely one is enough? I generally point my camera at the subject, and keeping my finger on the shutter release, recompose the shot then take the picture. If I were to spend time trying to pick from 48 focus points, I'd lose the picture. There's no point in the camera selecting, because if it picked the closest subject the background might not be in focus, which is no good for landscape shots. As ever, sometimes less is more.

Andrew S Redding

A I fundamentally disagree with you on this point, Andrew. While your focus-and-recompose technique works just fine under many circumstances, there are some situations where it does fail. In

particular, it'll give focus errors when shooting with fast primes wide open. So if, for example, you're shooting portraits with an 85mm f/1.4, you'll achieve more accurate focusing using an off-centre focus point placed over the subject's eye.

Having many AF points is also useful when shooting sports or moving subjects. If you use a camera with multiple AF points it can keep track of the subject as it moves around the frame and always keep it in focus, regardless of whether it moves off-centre.

With many cameras, it's also easy to set an off-centre focus point. Then, if you're shooting shots with similar compositions, you can leave the AF area in the same place for all of them.

Personally, I feel more is indeed more. Keep doing what works for you, but there are good reasons for all those AF points.

Andy Westlake

Angle angst

Q I'm thinking of upgrading my SLR to a high-quality mirrorless camera, so I was interested by the new wideangle Olympus PRO lenses, the 8mm f/8 fisheye and 7-14mm f/2.8. But one thing confuses me: how can an 8mm lens have a wider field of view than a 7mm lens? I've also read that some lenses, like the 7-14mm, have lots of barrel distortion and correct it in software. But this gives a narrower view, so is it in fact not a 7mm after all, but more like an 8mm?

Martina Appleby

A These two questions are closely related, and both concern the relationship between focal length, distortion and angle of view.

With a perfectly corrected lens, there's a very simple relationship between the focal length, sensor

size and angle of view. The manufacturer-quoted angle of view is usually based on this, essentially assuming that the lens is perfectly corrected. Normally this isn't exactly true.

However the moment the lens starts to show distortion, things change. A lens with some barrel distortion actually gives a slightly wider angle of view, as the bowing of lines towards the edges of the frame means it can 'see' a little more at the corners of the image. Take this to the extreme of a fisheye lens, and you can get a 180° angle of view, but with objects in the centre of the image the same size as from a fully-corrected 8mm lens.

The result is that a 7mm lens that's designed to use software correction of barrel distortion is still genuinely a 7mm lens, and only gives the quoted angle of view after correction.

Andy Westlake



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0.9 Full ND	£13.50	Circular Polariser	£26.00	0.9 ND Glass Pro	£29.95
1.2 Full ND	£15.95	Blue Grad	£13.50	ND Glass Pro Set	£79.95
0.3 Soft ND Grad	£13.50	Sunset Grad	£13.50		
0.6 Soft ND Grad	£13.50	Twilight Grad	£13.50		
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39mm	49-52	67mm	58-82
40mm	49	72mm	86-105
40.5mm	37-58	77mm	58-105
43mm	37-72	82mm	72-105
43.5mm	46-58	86mm	72-105
46mm	37-62	93mm	82
48mm	46-58	95mm	82-105
49mm	37-77	105mm	86-95
52mm	46-77		

Lens Adaptors

In the bag

With his ethereal images, Mark Littlejohn is fast becoming one of the UK's most prolific landscape photographers. www.markljphotography.co.uk

Nikon Df

1 I've opted out of the megapixel race and have found that the 16-million-pixel sensor works perfectly on the Df. Dynamic Range, and the High ISO ability allows me to shoot without tripod or filters in the vast majority of situations. I've printed 30x20in with no issues and could go bigger.

Nikon Nikkor 70–200mm f/4G

2 The great thing about this lens is that it means I am able to leave my 85mm, 135mm and 180mm at home. I still use those lenses from time to time, but this zoom is light and is a really good match for the Df. I love being able to focus on and pick out wee bits of landscape with it.

Lowepro Flipside Sport 20L AW

3 This is the thing that holds it all together. The bag itself is very light, yet well padded and set out. If required I can add in an extra couple of lenses and my MacBook Pro. On a recent trip to Iceland it was the only bag I needed and didn't attract a second glance as my carry-on case.



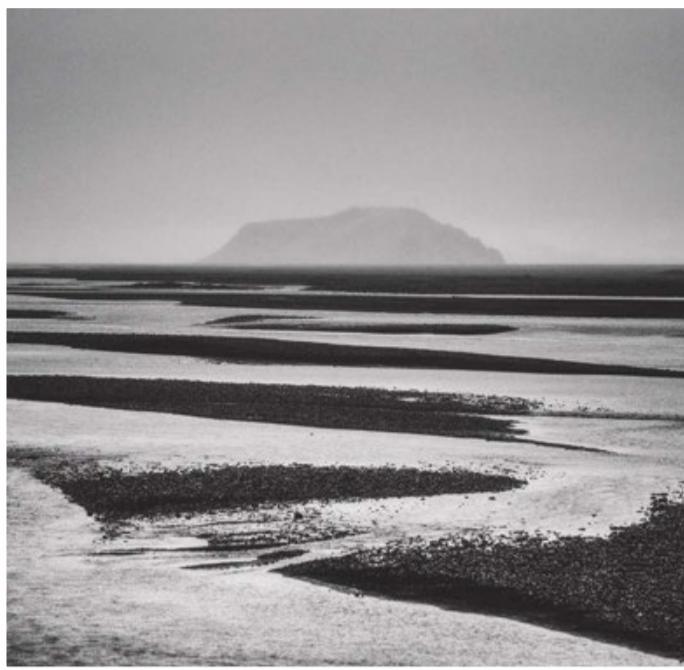
Nikon Nikkor 35-70mm f/2.8D

4 This lens might be old but both build and image quality are well up to par. Unlike today's 24-70mm f/2.8 lenses, you don't have to be a weightlifter to use it. The 35mm is a great walk-around focal length for landscapes and I don't often have to go wider.

Zeiss 18mm f/3.5 Distagon T* ZE

5 I don't often feel the need to go for an ultra-wide but it's a handy extra to have. It feels like it's been made from one piece of metal and the manual focus is smooth as silk. I can set it to f/8 and infinity and just wander through some of my favourite woods.

List of kit Nikon Df DSLR camera, Nikon AF-S Nikkor 70–200mm f/4G ED VR, Nikon AF-Zoom – Nikkor 35-70mm f/2.8D, Zeiss 18mm f/3.5 Distagon T* ZE, Lowepro Flipside Sport 20L AW backpack



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What's bad The exposure meter occasionally develops electrical problems in old age.



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Professor Newman on...

DIY super resolution

Bob Newman shows how you can achieve super-resolution if your camera doesn't have such a feature

In my last article I discussed how three camera manufacturers have introduced super-resolution based on making multiple exposures, moving the position of the sensor between each. Here I'll show how you might duplicate some of the effect if you don't have a camera equipped with this feature.

The way this super-resolution works is essentially the same: multiple exposures are made, with the sensor shifted slightly between each. Instead of using precision piezoelectric actuators to achieve the effect, we'll use camera shake. Obviously this is not as precise or predictable, so we'll end up with multiple exposures with some randomised variation in position. While this can't achieve the tidy, precise subsampling of the purpose-built mechanism, it will generally produce enough variation to give much the same effect.

The first step is to take your photographs. Six to eight seem to work well, and to avoid parts of the subject moving they need to be taken as quickly as possible – ideally putting the camera in high-speed drive mode and firing off a short burst. To get the required camera shake, the camera should be handheld (as steady as possible, trying to introduce shake will over-egg the pudding) and the shutter speed set high to avoid shake in any individual exposure.

Assuming that you have a set of processed photos (either camera JPEGs or processed yourself from raw) the next step is to align them with sub-pixel precision. To do this first up-sample the photos to double the linear resolution using your favoured image editor. The form of interpolation doesn't matter too much, so long as it isn't 'nearest neighbour', so I'd choose the quickest – probably linear.



Stackcrop1.jpeg



Stackcrop2.jpeg

This stacked image (top) was constructed from six frames from an Olympus E-1, processed as below and reproduced 1.4x original size. The stacked crop (Stackcrop1.jpeg) shows a slight resolution increase over a single frame from the stack that's been similarly enlarged (Stackcrop2.jpeg)

The next step is to align the enlarged images. If you are using Photoshop you can load all the images as separate layers, and then use the 'Auto Align Layers' command. If you are using another tool, then there is a free, open-source programme you can use to do the job. It's part of the 'Hugin' panorama tools (www.hugin.sourceforge.net) and the tool you need is called 'align_image_stack'. It is a command-line tool, and needs to be given the filenames of all the images that you want aligned. It will work on them for a (long) while and then output a set of TIFF files containing the now aligned layers. You should load these into your preferred image editor as layers.

The next step is to merge the layers to one super-resolution image. To do this, set the transparency of each layer as follows. If we count the bottom layer as '1', counting upwards, then the transparency of each layer needs to be set to 1/layer number $\times 100\%$ – so layer 1 (bottom) is set to 100%, layer 2 to 50%, layer 3 to 33% and so on. Then simply flatten the image, and you have your super resolution image. It's possibly more realistic to downsize it to about double the original pixel count (as produced it will have four times the count). This technique really can produce increased resolution and some freedom from aliasing effects.

Bob Newman is currently Professor of Computer Science at the University of Wolverhampton. He has been working with the design and development of high-technology equipment for 35 years and two of his products have won innovation awards. Bob is also a camera nut and a keen amateur photographer

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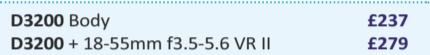
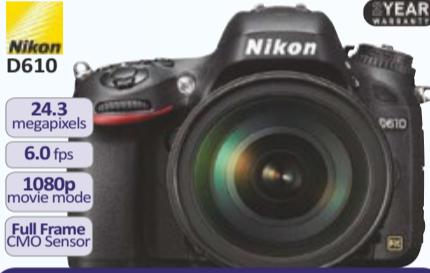
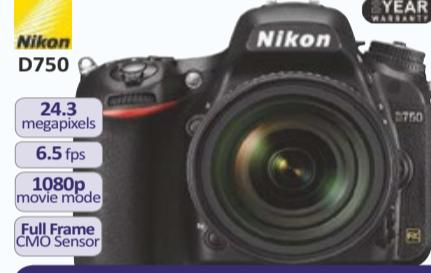
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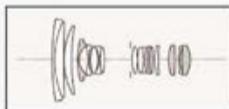


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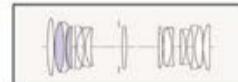
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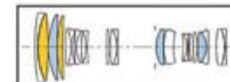
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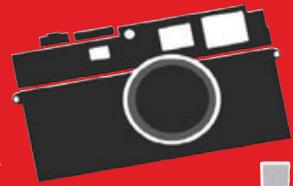
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Panasonic 25mm F1.4 Lumix D	E++ £349	Sigma 400mm F5.6 Apo Tele Macro.	E+ £189	21mm F2.8 G + Finder.	E++ / Mint- £499 - £549	Sony NEX3 + 16mm F2.8	E+ £139
Olympus 25mm F2.8 Zuiko	E++ £139	Sigma 500mm F4.5 Apo EX HSM	E+ £1,689	21mm F2.8 G + Finder - Black	E+ £649	Sony NEX3 + 18-55mm.	E+ £129
Olympus 35mm F3.5 Macro Zuiko	E+ / E++ £99 - £129	Sigma 600mm F8 Reflex.	E+ / E++ £99 - £179	28mm F2.8 G	E++ £249 - £289	Sony NEX3 + 18-55mm.	E+ £129
Olympus 40-150mm F3.5-4.5 Zuiko	E+ / E++ £39 - £49	Tamron 10-24mm F3.5-4.5 Di II LD Asph.	E++ £279	28mm F2.8 G - Black.	E++ £299	Sony NEX3 + 18-55mm.	E+ £129
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Olympus 50-200mm F2.8-3.5 SWD	E++ £489	Tamron 17-35mm F2.8-4.8 RX DI.	E++ £169	16mm Viewfinder.	Mint- £199	Sony NEX5 + 16mm F2.8	E+ £159
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Panasonic 12-32mm F3.5-5.6 OIS G	E+ / E++ £169 - £179	Tokina 28-70mm F2.6-2.8 ATX Pro.	Unused £249	RTS3 Body Only.	E+ £299	Canon EOS 600D Body Only	As Seen £189
Panasonic 12-35mm F2.8 G Vario OIS	E++ £539	Tokina 28-70mm F4.0 L TSE.	Mint- £1,349	RX Body Only.	E+ £199	Canon EOS 550D Body Only	E+ £2,229
Panasonic 12-35mm F3.5-5.6 Asph G	E++ £159	Tokina 28-80mm F2.8 ATX Pro.	E++ £239	S2 Body Only.	E+ / Unused £450 - £549	Canon EOS 500D Body Only	E+ £159 - £169
Olympus 12-50mm F3.5-6.3 M Zuiko	E+ £139	Tokina 35mm F2.8 Macro DX ATX.	New £325	ST Body Only.	E+ £229	Fuji S2 Pro Body Only.	As Seen £59
Panasonic 12.5mm F12 G 3d	Mint- £109	Tokina 50-135mm F2.8 DX ATX.	Ex Demo £480	RTS2 Body + Motordrive.	E+ £199	Fuji S3 Pro Body Only.	E+ £99
Panasonic 14-140mm F4.5-5.6 OIS	E++ £249	Tokina 300mm F2.8 ATX SD.	E+ / E++ £649 - £849	RTS2 Body + Winder.	E+ £169	Fuji S5 Pro + MB-D200 Grip.	E+ £239
Panasonic 14-42mm F3.5-5.6 Asph OIS	E++ £79	Zeiss 28mm F2 ZE.	E+ £549	RTS2 Body Only.	E+ £129 - £149	Minolta Dynax 7D + VC-7D Grip.	E+ £149
Olympus 14-42mm F3.5-5.6 M Zuiko	E++ £79	22mm F2 STM.	Mint- £109	RX Body Only.	E+ £169	30mm F3.5 C Fi Fisheye.	E+ £2,599
24mm F1.4 L USM	Mint- £749	17mm F2.8 L USM.	Exc £39	137MD Body Only.	E+ £169	30mm F3.5 C Fi Fisheye.	E+ £2,599
Panasonic 14-45mm F3.5-5.6 ASPH G Vario	E++ £129	17-40mm F4 L USM.	E+ / E++ £339 - £429	167MT Body Only.	E+ / E++ £59 - £89	30mm F3.5 C Fi Fisheye.	E+ £2,599
Voigtlander 17.5mm F0.95 Asph.	E++ £649	17-55mm F2.8 EFS IS USM.	E++ / Mint- £399 - £439	176MT Body Only.	E+ / Unused £49 - £249	30mm F3.5 C Fi Fisheye.	E+ £2,599
Olympus 17mm F1.8 M.Zuiko Black	Mint- £279	17-55mm F2.8 L USM.	E++ £79	Preview Body Only.	E+ / Unused £49 - £249	30mm F3.5 C Fi Fisheye.	E+ £2,599
Olympus 17mm F1.8 M.Zuiko	Mint- £279	24-70mm F2.8 L USM.	E++ £79	2x EF Extender.	E+ / E++ £109 - £119	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Olympus 17mm F1.8 M.Zuiko	E++ £129	24-105mm F4 L IS USM.	E+ £419	2x EF Extender.	E+ / E++ £179	28-70mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Panasonic 20mm F1.7 G Pancake	E++ £159 - £169	28mm F2.8 E.	E+ £149	30EZ Speedlite.	E+ / E++ £15 - £29	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Panasonic 25mm F1.4 DG Summilux	Mint- £339	28-70mm F2.8 L USM.	E+ £349	30EZ Speedlite.	E+ / E++ £49	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
SLR Magic 26mm F1.4 - Micro 4/3rds	E++ £59	28-105mm F3.5-4.5 USM.	E+ £99	380EX Speedlite.	E+ / E++ £69 - £79	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Panasonic 35-100mm F2.8 GX OIS Vario	E++ £689	28-200mm F3.5-5.6 USM.	E+ £139	420EX Speedlite.	E+ / Mint- £144 - £149	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Olympus 40-150mm F4.5-6.5 R ED M.Zuiko	E+ £99	35-150mm F3.5-5.6 L USM.	Mint- £649	430EZ Speedlite.	As Seen / E+ £15 - £29	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Panasonic 45-175mm F4.5-6.5 Asph Vario PZ	Mint- £219	35-200mm F2.8 TSE-E.	E+ £699 - £849	540EZ Speedlite.	E+ / E++ £39 - £49	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279
Olympus 45mm F1.8 M.Zuiko	E+ / Mint- £149	45mm F2.8 L USM.	E+ £889	540EZ Speedlite.	E+ / E++ £99 - £109	30mm F3.5-4.5 MM.	E+ / Mint- £259 - £279



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Extension Tube 56E	E+ £59	Bellows II	E+ £85	70-300mm F4.5-6.6 AFS VR	Mint- £279
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Hc1 Prism	Exc £39	Motor M	E++ £199 - £249	80-400mm F4.5-6.6 G AFS ED VR	Mint- £1,549
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PM5 Prism	E++ £199			85mm F1.8 AF-S G	Mint- £279
PM90 Prism	E+ £159	Mamiya RB67 Series		85mm F1.8 AFD	Mint- £239
PME Meter Prism	E+ £129			105mm F2.8 AFD Micro	E+ £329
PME3 Meter Prism	E++ £259	Pro S Gold Edition		105mm F2.8 AFS G VR Micro	E+ £499
PME51 Meter Prism	E++ £349	Pro Body + WLF	E+ £119	135mm F2 D AF DC	E+ £789
PME90 Meter Prism	Exc £349	127mm F3.5 KL	As Seen £79	180mm F2.8 ED AFD	Mint- £489
Waist Level Finder - Chrome	E+ / E++ £39 - £69	140mm F4.5 C Macro	As Seen £79 - £99	200-400mm F4 G VR AFS IFED...E++ / Mint- £2,749 - £2,799	
		180mm F4.5	As Seen £69	300mm F2.8 G AFS ED VR II	E+ £3,099
		180mm F4.5 C	As Seen / E+ £75 - £99	300mm F4 AFS IFED	E+ / E++ £679 - £749
		250mm F4.5	As Seen £79 - £99	300mm F4 ED AFN	E+ £389
M Monochrom Black Body Only	E++ / Mint £3,999 - £4,489	250mm F4.5 C	E+ £149	500mm F4 AFS IFED II	E+ £2,950
M Monochrom Chrome Body Only	Mint £3,999	250mm F4.5 KL-A	...Mint- £199	Samyang 14mm F2.8 AE ED AS IF UMC	E+ £229
M (240) Black Body Only	Mint- £3,849	Komura 2x Converter	E++ £45	Samyang 24mm F1.4 AE ED AS UMC	Mint- £379
M (240) Chrome Body Only	E++ £3,899	Auto Extension Tube No1	E+ / E++ £39 - £55	Schneider 90mm F4.5 PC-TS Makro	E+ £1,949
M9 Black Body Only	E+ £2,299 - £2,399	Auto Extension Tube No2	E+ / E++ £29 - £39	Sigma 10-20mm F4.5-6.6 EX DC HSM	E- £219
M9 Steel Grey Body Only	E++ £2,399	Angle Finder	E++ £79	Sigma 17-50mm F2.8 EX DC HSM	Mint- £239
ME Anthracite Body Only	E++ / Mint £2,979 - £3,299	Pro SD 120 Mag (6x4.5cm)	...Mint- £69	Sigma 18-50mm F2.8 EX DC HSM	E+ £149
M8 Black Body Only	E+ £899 - £1,149	ProS 220 Mag...	E++ £145	Sigma 18-250mm F3.5-5.6 DC OS	E- £179
M6 Platinum + 50mm F1.4	Mint £6,499	ProSD 120 Mag (6x4.5)	E++ / Mint- £59 - £69	Sigma 28-70mm F2.8 EX Asph	E+ £149
M6 TTL Millennium + 35mm F2 + 50mm F1.4..E++ £5,950				Sigma 30mm F1.4 EX DC HSM	E+ £159
M6 Titanium + 35mm F1.4.....E+ £3,499		Mamiya RZ67 Series		Sigma 35mm F1.4 DG HSM A	E++ £499
M6 Titanium + 35mm F1.4 + 50mm F1.4..E++ £4,499				Sigma 50-150mm F2.8 Apo HSM II	E+ £349
M6 Historica Edition.....Mint £3,799		Pro Complete	E+ / E++ £449	Sigma 50-500mm F4.5-6.3 APO DG OS HSM	E+ £599
M7 0.72x Black Body Only	E++ £1,199	50mm F4.5	...Exc £350	Sigma 105mm F2.8 EX DG Macro	E- £199
M7 0.72x Chrome Body Only	E++ £1,199 - £1,499	50mm F4.5 ULD	E+ £249	Sigma 150-500mm F5.6-3.4 APO DG OS HSM...E+ / E++ £429 - £479	
M6 0.72x Black Body + Winder M.....E+ £749		50mm F4.5 W	E+ / E++ £149 - £199	Sigma 180mm F3.5 Apo EX Macro	E+ £349
M5 Black Body Only	E+ £549	75mm F4.5 Shift W...	E+ £399	Sigma 300mm F2.8 APO EX DG HSM	E+ £1,689
M4P Anniversary Chrome + 50mm F2.....E++ £1,875		100-200mm F5.2 W	E+ / E++ £249 - £399	Sigma 500mm F4.5D APO EX HSM	E+ £1,849
M4 Chrome Body Only	E+ £699	140mm F4.5 Macro W	E++ £259	Tamron 14mm F2.8 Asph (IF) AF SP	New £395
M3 Chrome Body Only	E+ £499 - £549	180mm F4.5 WN	As Seen / E+ £89 - £129	Tamron 14mm F2.8 XR Di II	E+ £179
M2 Chrome Body Only	Exc / E+ £389 - £449	250mm F4.5	Exc / E+ £129	Tamron 17-50mm F2.8 XR Di II VC	E+ £249
MD2 Black Body Only	E+ £349	1.4x Converter	Exc / E++ £119 - £199	Tamron 17-50mm F2.8 XR Di II VC LD Asph...E+ / E++ £249	
MDA Chrome Body Only	E+ £249	120 Pro Mag	E+ £59	Tamron 18-270mm F3.5-6.3 Di II VC	E+ £179
Konica Hexar RF Limited Edition.....Mint £2,499		120 Pro Mag (6x4.5)...	E+ £145	Tamron 20-40mm F2.7-3.5 SP Asph	E+ £179
Konica Hexar RF + 50mm F2 + Flash	E+ £799	Polaroid Mag (RZ67)...	E+ £29	Tamron 24-70mm F2.8 DI VC USD	E+ £589
16/21/22mm F4 Tri Elmar + Finder	E+ / Mint- £2,999 - £3,199	PE Prism Finder	E+ £179	Tamron 28-200mm F3.8-5.6 Asph	Mint- £579
18mm F3.8 Asph M Black.....E+ £1,599		PE Prism Finder	As Seen £79	Tamron 28-300mm F3.5-6.3 XR DI	E+ £99
21mm F1.4 Asph M Black 6bit.....Mint- £3,699		Auto Extension Tube No 1...	Mint £79	Tamron 70-200mm F2.8 DI	E++ £349
21mm F2.8 Asph M Black.....E+ / Mint- £1,549 - £1,649		Auto Extension Tube No 2...	Mint £79	Tamron 70-200mm F2.8 VC USD	Mint- £789
21mm F2.8 Asph M Black 6bit.....E+ £1,599 - £1,699		Front Bellows Hood G3...	Mint- £45	Tamron 90mm F2.5 SP AF...	E+ £159
21mm F2.8 M Black.....E+ / E++ £989 - £1,199		G2 Bellows Lens Hood	E+ £29 - £39	Tokina 11-16mm F2.8 ATX Pro DX	E+ £329
21mm F3.4 R + 122228 M Mount.....Mint- £799		IIR1 Infra Red Set...	E+ £39	Tokina 12-24mm F4 ATX PRO SD...E+ / E++ £259 - £269	
21mm F4 Chrome + Finder.....E+ £1,149		Tilt/Shift Adapter (RZ67)...	E+ £399	Tokina 20-35mm F2.8 ATX Pro	E++ £299
24mm F2.8 Asph M Black.....Exc / E+ £999 - £1,429		Winder II	Exc / E+ £39 - £49	Tokina 35mm F2.8 Macro DX ATX...E+ / New £249 - £325	
24mm F2.8 Asph M Black 6bit...E+ / Mint £1,489 - £1,599				Tokina 80-400mm F4.5-5.6 ATX	E+ £249
28/35/50 F4 Tri Elmar.....E+ £2,399 - £2,889				Tokina 100mm F2.8 AF PRO D ATX	E+ £249
28mm F2 Asph M Black.....E+ £1,399		Nikon AF		Voigtlander 20mm F3.5 SLII	E+ £299
28mm F2.8 M Black.....E+ / E++ £639 - £799		F6 Body + MB40 Grip	E++ £789	Zeiss 18mm F3.5 ZF.2	E+ £749
35mm F1.4 Asph M Black.....E+ / E++ £1,749 - £2,149		F6 Body Only	E+ £699	Zeiss 21mm F2.8 ZF	E+ £799
35mm F1.4 Asph M Black 6bit.....Mint- £2,899		55 Anniversary Body Only	E+ £699	Zeiss 21mm F2.8 ZF2	Mint- £989
35mm F1.4 Black.....Exc / E+ £1,149		F5 Body + DA-30 Action Finder	E+ £349	Zeiss 25mm F2.8 ZF2	E++ £499
35mm F2 Asph M Chrome..E+ / Mint- £1,299 - £1,450		F5 Body Only	As Seen / E+ £149 - £299	Zeiss 35mm F2 ZF2	E++ £599
35mm F2.5 M Black 6bit + Hood.....Mint- £949		F4E Body Only	E+ £179	Zeiss 85mm F1.4 ZF	New £799
50mm F0.95 Asph M - Black.....Mint- £6,499		F4E Body Only	E+ £149	Zeiss 85mm F1.4 ZF.2	E++ £749
50mm F0.95 Asph M 6bit - Black.....Mint- £5,999		F90X + MF26 Back...	As Seen £29	Sigma 1.4x Apo EX Converter	E++ £99
50mm F1.4 Asph M Black.....E+ £1,799		F90 Body Only	As Seen £29	Kenko 1.4x Converter DG Pro300	E++ £79
50mm F1.4 Asph M Chrome 6bit.....E+ £1,889		10.5mm F2.8 G AF ED DX Fishey...	Mint- £369	Sigma 2x Apo EX DG Converter	Mint- £119
50mm F2 Collapsible.....As Seen / E+ £299 - £389		12-24mm F4 G AFS DX ED	E++ £369 - £389	TC-20EI Converter	E+ £179
50mm F2 M Black.....Mint- £999		16-85mm F3.5-5.6 G ED VR AFX DS...E+ / Mint- £299 - £329		Metz 40MZ2 Flash	Unused £69
50mm F2.5 M Black 6bit + hood.....Mint- £799		17-55mm F2.8 G AFS DX IFED..E+ / Mint- £449 - £549		Metz 48AF1 Digital	E++ £89
50mm F2.8 M Black 6BIT.....Mint- £799		20mm F2.8 AF	E+ £649	Nissin Di466 Flashgun	E+ £39
50mm F2.8 M Chrome 6bit.....E+ £649		18-55mm F3.5-5.6 AFS	E++ £59	Nissin Di622 Flashgun	Mint- £69
50mm F3.5 Chrome.....E+ £229		18-55mm F3.5-5.6 G AFS VR	E++ £79	Sigma EF430 Super Flash	E+ £39
65mm F3.5 Elmar.....E+ / E++ £245 - £299		18-70mm F3.5-4.5 G AFS ED DX	E+ £89	Sigma EF500 Super Flash	E+ £35
75mm F2.5 Black 6 BIT.....Mint- £999		18-200mm F3.5-5.6 G AFS DX VR	E++ £199	Sigma EF530 ST DG TTL Flash	E++ £79
90mm F2 Apo M Black 6bit.....Exc £1,499		20-300mm F3.5-5.6 G AFS DX VRII	E++ £319	Sigma EM-140 DG Macroflash - Nikon	Mint- £219
90mm F2 Black.....E++ £649		20mm F2.8 AFD	E+ / E++ £279 - £349	R1C1 Speedlight Commander Set	Mint- £429
90mm F2 Chrome.....E++ £650		24mm F1.4 G AFS ED	Mint- £1,099	SB21B Ringflash	E++ £99 - £179
90mm F2 M Black.....E++ £799		24mm F2.8 AFD	E++ £249	SB22 Speedlight	E++ £35
90mm F2 M Chrome.....E++ £899 - £999		24-50mm F3.3-4.5 AF	E+ £79	SB22 Speedlight	E+ / E++ £35 - £39
90mm F2.5 Black 6 BIT + Hood.....Mint- £949		25-50mm F3.3-4.5 AFN	E+ £99	SB23 Speedlight	E+ £29
90mm F2.8 Black.....As Seen £299		24-85mm F3.5-4.5 G AFS...	E+ £129	SB24 Speedlight	E+ £39
90mm F2.8 Chrome.....As Seen / E+ £179 - £349		24-120mm F3.5-5.6 ED AFD	E+ £89	SB25 Speedlight	E+ £49
90mm F2.8 M Black.....E+ £789		24-120mm F4 AFS G ED VR...	E+ £639	SB26 Speedlight	E+ / E++ £49 - £59
90mm F2 Elmar.....As Seen / E+ £49 - £199		28mm F2.8 AFD	E+ £169	SB27 Speedlight	E+ £59
90mm F4 Elmar E39.....E+ £199 - £249		28-85mm F3.5-4.5 AF...	E+ £69	SB28 Speedlight	E+ / E++ £59 - £69
135mm F2.8 Black.....E+ / E++ £299 - £349		28-300mm F3.5-5.6 G ED AFS VR...E+ / Mint- £449 - £499		SB400 Speedlight	E+ £75
135mm F2.8 M Black.....E++ £389		35mm F1.8 G AFS DX	Mint- £109	SB50DX Speedlight	E+ / E++ £39 - £49
135mm F4 Black.....Exc / E+ £349 - £389		35mm F2 AFD	E++ £189	SB600 Speedlight	E+ / E++ £109 - £149
135mm F4 Chrome.....E+ £249		35-135mm F3.5-4.5 AFN...	E+ £79	SB800 Speedlight	E+ / E++ £139 - £149
135mm F4 M Black.....E+ £799		50mm F1.8 AFD	E+ £79	SB900 Speedlight	E+ £189
135mm F4.5 Hektor.....As Seen £69 - £99		60mm F2.8 AF Micro...	E+ £219	SD8 Battery Pack	E++ £35
1.4x Viewfinder Magnifier M.....E+ £99		60mm F2.8 AFD Micro...	E+ £249		
18mm Chrome Viewfinder.....E+ £379 - £399		70-200mm F2.8 G AFS ED VRII	E+ £1,289		
21/24/8mm Viewfinder - Black.....E+ £249		70-200mm F4 G VR ED...	E+ £749		
21mm Black Viewfinder.....E+ £199		70-210mm F4 AF	E+ £179		
24mm Black Viewfinder.....E+ / E++ £179 - £199		70-300mm F4.5-6.6 AFG...	E+ / E++ £59		

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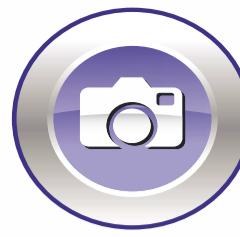
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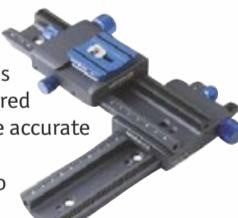
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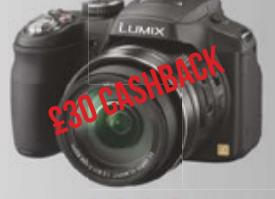
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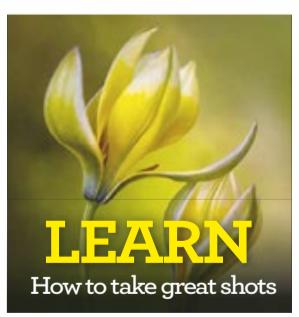
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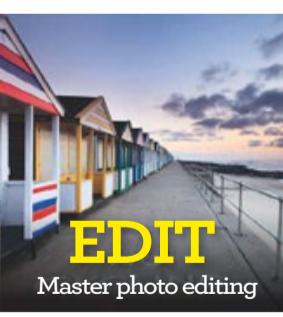
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Final Analysis

Roger Hicks considers...

'Carpenter, Douglas Dam', 1942, by Alfred T Palmer

The Tennessee Valley Authority (TVA) was founded in 1933. It had two aims. One was to ameliorate the truly wretched conditions in the Valley: on top of the Great Depression, incompetent farming had impoverished and eroded the soil, and perhaps 30% of the population suffered from malaria. The other was classic Keynes: spend your way out of a depression, instead of making it worse with austerity. Another such federal agency was the Farm Security Administration (FSA), probably better known to most photographers today.

The TVA worked in many ways: creating a navigable waterway, educating farmers, draining stagnant pools, and building dams for irrigation and to generate hydroelectric power, some of which was used to make fertiliser. It still exists today, but it has changed greatly over the years: this picture dates from one of the earliest of those changes. Once the Americans finally joined the Second World War, they needed lots of aluminium to build aircraft, and hydroelectric power became even more important, so they needed new dams.

Both the TVA and the FSA furnished subjects for numerous and excellent propaganda pictures. This was commonplace in the 1930s and '40s, and the quality of the photography was often independent of the regime that commissioned it: both the Soviet Union and the Nazis produced first-class propaganda pictures too.

Their approaches were often very different. In particular, the United States was a lot more honest about the existence of poverty, and tried to shock people into supporting government measures to ameliorate it. But then, the USA was a democracy, while Stalin and Hitler wanted no truck with such nonsense.

Sometimes, though, the approaches were very similar, and the Heroic Worker was a staple of all three. This is a 4x5in Kodachrome (10 ASA, although ASA had yet to be invented) from an era when colour was still rare, expensive and technically demanding. Parts of the carpenter's white clothes are all but 'blown', it's true, but thanks to the use of



fill-flash (look at the shadow of his right hand) the tonal range has mostly been kept within the limited latitude of Kodachrome. Also, the foreground is slightly over-lit, making it stand out against the background with its great looming cranes. More even lighting would have allowed those cranes too much prominence.

The pose is pretty much standard Heroic Worker. No eye contact, because he is

Everyman: his work is more important than he is. A well-muscled body: no hunger here. Clothes dirty (hard work) but not ragged (poverty). Well shod, of course. The hard hat is, however, quite interesting. From the fit and the angle, it doesn't look as if he habitually wore it. Today (and probably then too) it would, however, be mandated by Health and Safety at Work: the photographer would omit it at his peril.



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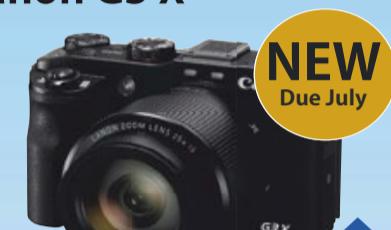
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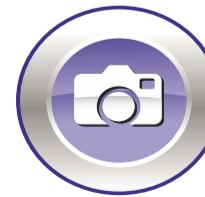
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